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WILSON BOULEVARD EXTENSION/BENFIELD ROAD CORRIDOR STUDY

FINAL DRAFT SEPTEMBER 2009

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Draft Report (rev. 9/09)

Section 1.0 Introduction

The Wilson Boulevard Extension/Benfield Road Corridor Study (study) was initiated by the Collier County Transportation Planning Department in July 2007. The Collier County Growth Management Plan requires transportation system enhancements to maintain the adopted roadway level of service to accommodate approved and anticipated development. The existing CR 951/Collier Boulevard facility serves as the primary corridor for north-south mobility connecting Marco Island to the northern limit of Collier County at Immokalee Road and is planned to be extended into Lee County. Although growth along the corridor has subsided due to the current economic downturn, the development of remaining land in Golden Gate Estates and along the corridor will ultimately cause the CR 951/Collier Boulevard facility to fail.

The study has evaluated various alternatives for mobility along the CR 951/Collier Boulevard corridor and to the east. The study considered potential facilities as identified in the Collier Metropolitan Planning Organization (MPO) 2030 Long Range Transportation Plan (LRTP) adopted January 12, 2006 and additional facilities. All options considered impacts on CR 951/Collier Boulevard and adjacent facilities. It should be noted that parallel facilities west of CR 951/Collier Boulevard were also evaluated for traffic impacts that would result from the various alternatives. The area studied is approximately 20 miles long and 9 miles wide, bordered by US 41 to the south, CR 951/Collier Boulevard to the west, Golden Gate Boulevard to the north and Everglades Boulevard to the east.

Figure 1 shows the boundaries of the study area.

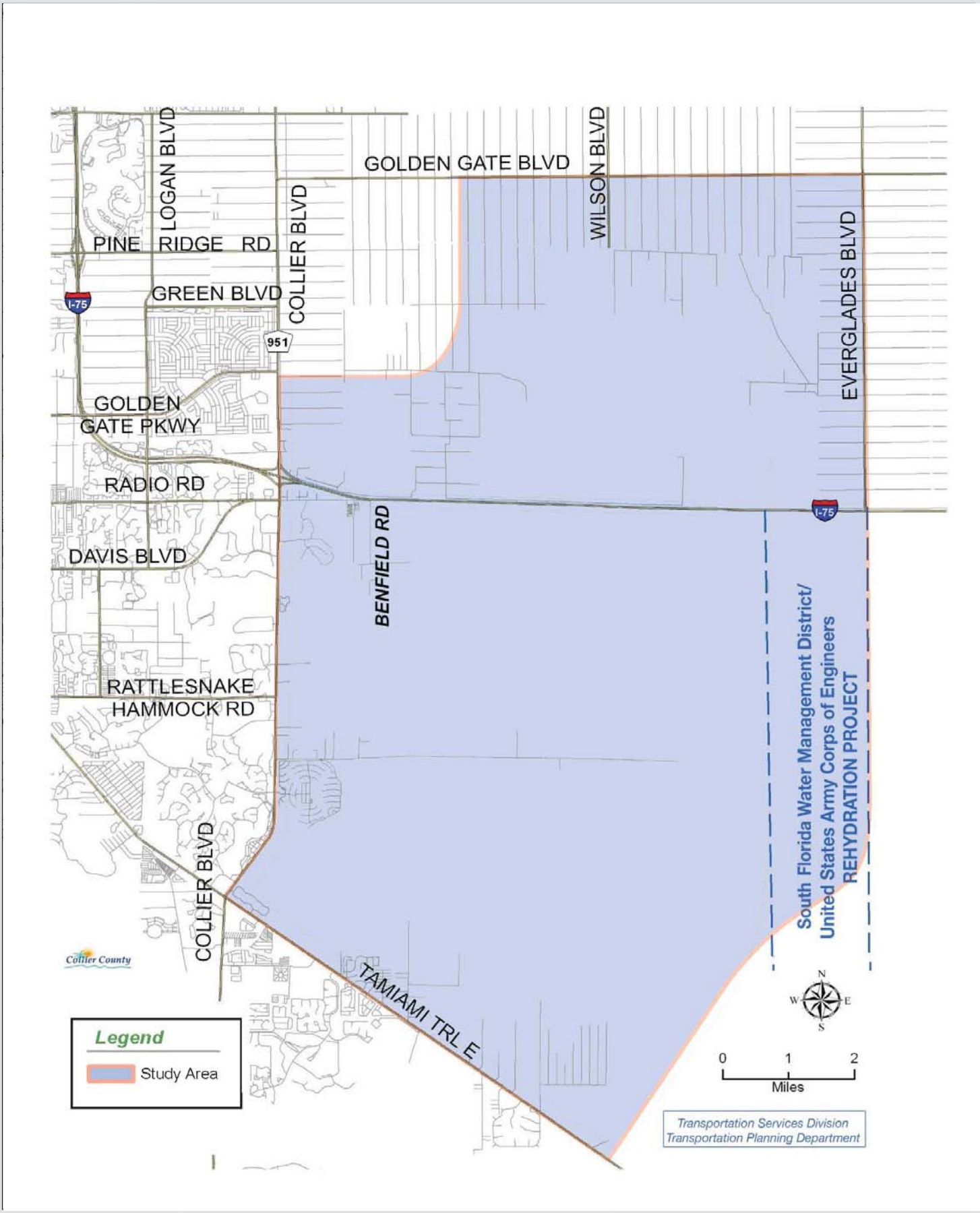

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FIGURE 1

Study Area Map

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

WILSON BOULEVARD extension BENFIELD ROAD corridor Study
Collier County

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1.1 Purpose of Corridor Study

The purpose of the study was to evaluate the feasibility, impacts and costs associated with the various alternatives that will be needed to maintain the adopted level of service, mobility and to make recommendations that will preserve the integrity of the corridor while minimizing social and environmental impacts. The study met the following goals and objectives:

- To ascertain the study area's existing transportation demands, including traffic volumes, travel characteristics and historical trends; facility operation (level of service), conditions of existing facilities and committed plans for improvements
- To estimate the future year traffic demands, including traffic volumes, travel characteristics, circulation and mobility needs for the study area
- To generally describe natural, physical, environmental, social, political, operational, and economic constraints within the study area that could have a negative social and economic effect associated with the proposed alternatives. The proposed alternatives should avoid or minimize the displacement of residences and businesses as well as avoid or minimize impacts to environmentally sensitive lands
- To develop and recommend alternative corridors that are consistent with the Collier County Growth Management Plan and LRTP or options that should be considered for inclusion in these plans
- To assess impacts of existing and proposed development/land use
- To provide sufficient preliminary engineering and environmental information using standard typical sections and sketch planning techniques to serve as input for future facility construction
- To maximize public outreach efforts to ensure that communications efforts and public's participation in all phases of the study process will be maintained and expanded by identifying and involving stakeholders
- To develop a traffic circulation plan for the local system connections to the primary facilities of Wilson Boulevard, Golden Gate Boulevard, CR 951/Collier Boulevard, White Lake Boulevard, Beck Boulevard, Rattlesnake Hammock Road and, Sabal Palm Road which promotes safe vehicular, transit and bicycle/pedestrian mobility

1.2 Need for the Project

The *need* for a north-south arterial road was identified in the Collier Metropolitan Planning Organization (MPO) 2030 Long Range Transportation Plan (LRTP) and the Interim 2015 Plan, approved by the Board of County Commissioners on March 10, 2006. The Collier MPO 2030 LRTP minor update approved by the MPO Board on June 8, 2007 maintained the need for this arterial. The Wilson Boulevard Extension/Benfield Road Corridor is identified in the 2030 LRTP as a financially feasible project.

The Wilson Boulevard Extension/Benfield Road Corridor Study is consistent with Goal 6 of the Golden Gate Area Master Plan as defined within the Collier County Growth

Management Plan, which states that: "future transportation improvements within the Golden Gate Area shall provide for a safe and efficient county and local roadway network, while at the same time seeking to preserve the rural character of Golden Gate Estates." Additionally, the proposed corridor is anticipated to cross over I-75, and intersect US 41, two important state evacuation routes. This route will also provide the opportunity for traffic to circulate and connect to CR 951/Collier Boulevard, another state evacuation route.

1.2.1 Population Growth and Regional Studies

According to the Bureau of Economic Business Research (BEBR), April, 2008, the population of Collier County is projected to increase from 332,854 in year 2008 to 472,000 in year 2030.

Collier County 2030 Population Forecast

- 2008 Population : 332,854
- 2030 Population : 472,000
- Growth from 2008 to 2030: 139,146
- Simple Annual Growth Rate : 1.9 percent

Within the study area, the following additional studies are currently underway, or have been recently completed:

- East of CR 951 Infrastructure & Services Horizon Study
- East of CR 951 Bridge Study
- Wetlands and Species Analysis
- CR 951 Transportation Concurrency Management Area (TCMA)
- Golden Gate Area Master Plan
- Big Cypress Basin 5-year Plan
- I-75/Everglades Boulevard Interchange Justification Report

1.2.2 Traffic Conditions

Existing Year (2007) and projected 2035 Annual Average Daily Traffic (AADT) volumes and truck traffic percentages for CR 951/Collier Boulevard, from Golden Gate Boulevard to US 41 were documented by the consultant in the Existing Conditions Report, revised in April 2008. CR 951/Collier Boulevard serves as a key intrastate freight corridor providing access to local agricultural and ranching operations, as well as to freight activity centers located through out south Florida and the populated coastal areas. The Wilson Boulevard Extension/Benfield Road Corridor capacity enhancement is expected to improve the circulation of goods and services. The volume of heavy vehicles on this new roadway, in turn, is anticipated to decrease the amount that currently use the parallel CR 951/Collier Boulevard, and provide some relief to CR 951/Collier Boulevard in keeping pace with population and economic growth.

The 2007 roadway levels of service on the functionally classified roadways within the study impact area are presented in the Existing Conditions Report, provided in Appendix 1. Without the proposed Wilson Boulevard Extension/Benfield Road Corridor, operating conditions on many of the functionally classified roadways within the study impact area are expected to fall below the adopted level of service by the design year (2035) or shortly thereafter.

1.2.3 Connectivity

The Wilson Boulevard Extension/Benfield Road corridor is proposed as a north-south principal arterial in eastern Collier County that will provide an additional connection to the Golden Gate Estates community with I-75 in the center of the corridor, and US 41 at the south.

The Wilson Boulevard Extension will add the only additional new north-south arterial roadway in eastern Collier County between CR 951/Collier Boulevard, and SR 29. One of the alternatives currently under review would link to a possible interchange at Everglades Boulevard and I-75 (Interchange Justification Report currently ongoing) which would provide another route to Immokalee, the Immokalee Regional Airport, the community of Ave Maria, and points north. The expansion of Wilson Boulevard from Immokalee Road south is a part of an overall plan to improve corridor access and relieve traffic congestion.

1.2.4 Freight Mobility

Freight mobility is a critical and recognized element of Collier County's transportation program. To address freight mobility the study considered alternatives for the movement of freight from Immokalee, Immokalee Regional Airport and agricultural/industrial centers of the Rural Area of Critical Economic Concern (RACEC) to and from points south. Current and future mining operations within and around the study area continue to impact CR 951/Collier Boulevard.

The need for a new north-south arterial is demonstrated by the high daily truck volumes on surrounding north-south roadways. In 2007, five percent to over nine percent of the traffic on CR 951/Collier Boulevard consisted of trucks. Even though the percentage is expected to remain approximately the same, the volume of freight and goods movement is projected to increase to keep pace with population and economic growth.

A new north-south arterial would promote capacity enhancements in a key freight corridor, consistent with the strategies outlined in Collier County's Freight and Goods Mobility Analysis (Final, June 2008).

1.2.5 Relief to Parallel Facilities

A measure of effectiveness for each of the build alternatives is how much traffic each draws from facilities parallel to CR 951/Collier Boulevard and the corresponding impact to operating conditions.

Alternative 2, the Miller Boulevard alternative is shown in the analysis, to be too far east to provide much, if any congestion relief to CR 951/Collier Boulevard.

Both alternatives 3A and 3B draw significant amounts of traffic off CR 951/Collier Boulevard, and will divert a significant portion of north-south traffic from parallel facilities, resulting in improved arterial speeds and reduced delays through the entire study area.

1.2.6 Emergency Evacuation

Serving as part of the evacuation route network established by the Florida Division of Emergency Management, CR 951/Collier Boulevard plays a significant role in facilitating traffic during emergency evacuation periods as it connects to other major arterials designated on the state evacuation route network (I-75, US 41, and CR 846). The addition of a new north-south arterial would assist the roadways already designated by Collier County as a primary evacuation route, this facility could be critical in the evacuation of residents of Marco Island, Everglades City and Chokoloskee as it would serve as an additional north-south route in eastern Collier County. The addition of a new north-south arterial roadway east of CR 951/Collier Boulevard would enhance evacuation capacity and traffic circulation which will lead to improved evacuation and response times. Figure 1.2-1 displays the designated evacuation routes available in case emergency evacuation is necessary.

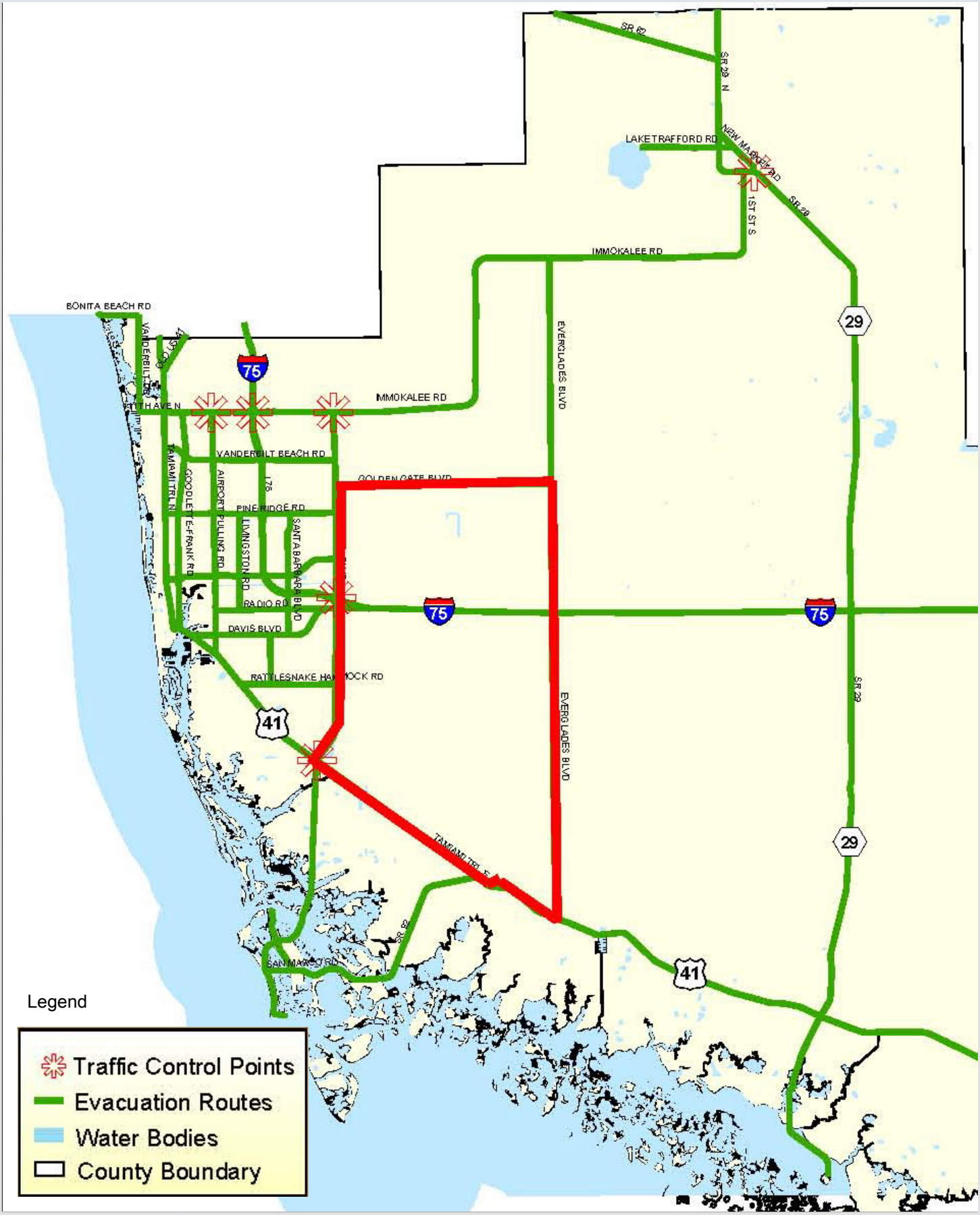

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FIGURE 1.2-1

Evacuation Route Map

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

WILSON BOULEVARD extension BENFIELD ROAD corridor Study
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1.3 Background

1.3.1 Collier County Growth Management Plan

This project is consistent with Objective 3 of the Transportation Element of Collier County's adopted Growth Management Plan adopted by Ordinance No. 2007-8, January 25, 2007. Policy 3.2 of Objective 3 states: "The County shall continue to include funding specifically earmarked for use in the advanced Right-of-Way Acquisition Program in its annual Capital Improvement Element funding. Studies shall be conducted periodically to identify the long-range right-of-way needs of the transportation system based on buildout. Following the completion of these studies, the Transportation Administrator will present a program of funding that includes actions necessary to protect and acquire needed right-of-way."

1.3.2 Long Range Transportation Plan

The need for a north-south arterial road was identified in the Collier Metropolitan Planning Organization (MPO) 2030 Long Range Transportation Plan (LRTP) and the Interim 2015 Plan, approved by the Board of County Commissioners on March 10, 2006. The Collier MPO 2030 LRTP minor update approved by the MPO Board on June 8, 2007 maintained the need for this arterial. The Wilson Boulevard Extension/Benfield Road Corridor is identified in the 2030 LRTP as a financially feasible project.

1.3.3 North Belle Meade Overlay

Overlays are typically developed in conjunction with the preparation of a comprehensive land-use plan. Careful consideration of economic impacts, natural impacts, and private rights are a benefit of using overlays.

An overlay is an additional zoning requirement that is placed on a geographic area but does not change the underlying zoning. Overlays have been used to impose development restrictions in specific locations in a watershed in addition to standard zoning requirements.

In the Collier County Growth Management Plan, Future Land Use Element, North Belle Meade and South Golden Gate Estates are designated as Natural Resource Protection Areas (NRPAs).

Any future roadway, including the Wilson Boulevard Extension/Benfield Road Corridor will be required to meet the requirements imposed by the North Belle Meade Overlay.

At its regularly scheduled June 28, 2005 meeting, the Board of County Commissioners (BCC) conducted a public hearing regarding short and long term transportation needs in the North Belle Meade Area. At the hearing's conclusion, the BCC adopted the following recommendations:

- Instruct staff to incorporate the study presented today into its current update of the Collier Long-Range Transportation Plan and the East of CR 951 Study.

- Instruct staff to continue an open dialogue with the community and the environmental interests to bring a recommended roadway network for the North Belle Meade area to the BCC for approval by April 2006.
- Require Florida Rock Industries to provide for any needed mitigation required to accommodate their connection to CR 951/Collier Boulevard in the vicinity of Landfill Road.
- Require Florida Rock Industries to also develop a haul route connection to I-75 based on an extension of Wilson Boulevard, or secondarily, to Everglades Boulevard south of Frangipani, with possible temporary connection to I-75, if allowed.

These recommendations concluded a process that had been ongoing since the North Belle Meade Overlay was adopted by the County Commission on June 19, 2002, as part of the Rural Fringe Plan Amendments of the Collier County Growth Management Plan.

1.3.4 Golden Gate Area Master Plan

The Wilson Boulevard Extension/Benfield Road Corridor Study is consistent with Goal 6 of the Golden Gate Area Master Plan as defined within the Collier County Growth Management Plan, which states that: "future transportation improvements within the Golden Gate Area shall provide for a safe and efficient county and local roadway network, while at the same time seeking to preserve the rural character of Golden Gate Estates."

Objective 6.1 states that: "The Collier County Transportation Division will continue to increase the number of route alternatives for traffic moving through the Golden Gate Area in both east-west and north-south directions, consistent with neighborhood traffic safety considerations, and consistent with the preservation of the area's rural character."

1.4 Study Approach

1.4.1 No Build

This alternative assumes that the proposed corridor will not be built; however, it does assume that other roadway improvement projects identified in the Financially Feasible Plan of the 2030 LRTP will still be constructed.

1.4.2 Development and Screening of Alternatives

Alignment alternatives were developed based on comments received from the corridor workshop and subsequent discussions with Collier County staff and area stakeholders. Preliminary traffic, engineering and environmental analyses were conducted for each alignment in order to screen out those that either do not meet the established need for the proposed north-south road or are not viable due to factors considered. The study team met with Collier County staff on June 26, 2008, to discuss the findings of the preliminary analyses and refine the alternatives within the study area. Sections 3.0 and 4.0 go into greater detail on the development and screening of alternatives.

1.4.3 Public Involvement Plan

Since the study began in 2007, Collier County has conducted a series of public outreach events, including two public workshops, the Benfield Road community meeting, the VeronaWalk community meeting and other meetings/presentations to agencies and stakeholders impacted by this corridor study.

A summary report for each of these public events was prepared, including a summary of written comments, handouts and notifications. For more details regarding the Public Involvement Plan, refer to Section 5.0 of this report.

Section 2.0 Existing Conditions

2.1 Land Use

Existing, approved and proposed developments were considered within the study area. The analysis included Developments of Regional Impact (DRIs), Planned Unit Developments (PUDs), conditional use applications, plats and any development orders that would impact the study area. The list of major developments that were included in the traffic simulation model when looking at the design year (2035) and other projects that have impacted the study is below. Figure 2.1-1 identifies these projects with each numbered to correspond to the list.

1. Big Bear Plaza
2. Wilson Boulevard Center
3. Snowy Egret
4. Warren Brothers Mining
5. Florida Rock Mining
6. Yahl Mulch and Recycling Center Expansion
7. Public Landfill Expansion
8. Century Park (proposed development)
9. White Lake Corporate Park PUD
10. City Gate DRI
11. Tollgate DRI
12. Club RV Naples Resort
13. Panther's Walk RV Resort
14. Picayune Strand State Forest
15. Comprehensive Everglades Restoration Plan (CERP)
16. State Lands
17. Everglades Ranch
18. M&H Stables (Belle Meade Ranch)
19. Triple V Ranch
20. Forest Glen
21. Southern Sand and Stone
22. San Marino
23. Toll-Rattlesnake LLC (proposed development)
24. First Assembly of God
25. Good Turn Center

26. Hammock Park Commerce Center
27. McMullen
28. Swamp Buggy Days
29. Collier Regional Medical Center
30. Rockedge PUD
31. Winding Cypress DRI
32. Naples Reserve PUD
33. Walnut Lakes
34. Regal Acres
35. Six L's Farms

Since the Wilson Boulevard Extension/Benfield Road Corridor Study was initiated, a new DRI Application of Development Approval (ADA) for Big Cypress has been submitted for development approval. Big Cypress does not fall within the study impact area, however, due to the size of the project, and the fact that several intersections with Everglades Boulevard are included in the ADA, it was determined to add the DRI to the Year 2035 socio-economic data, and used in the analysis of the alternatives.

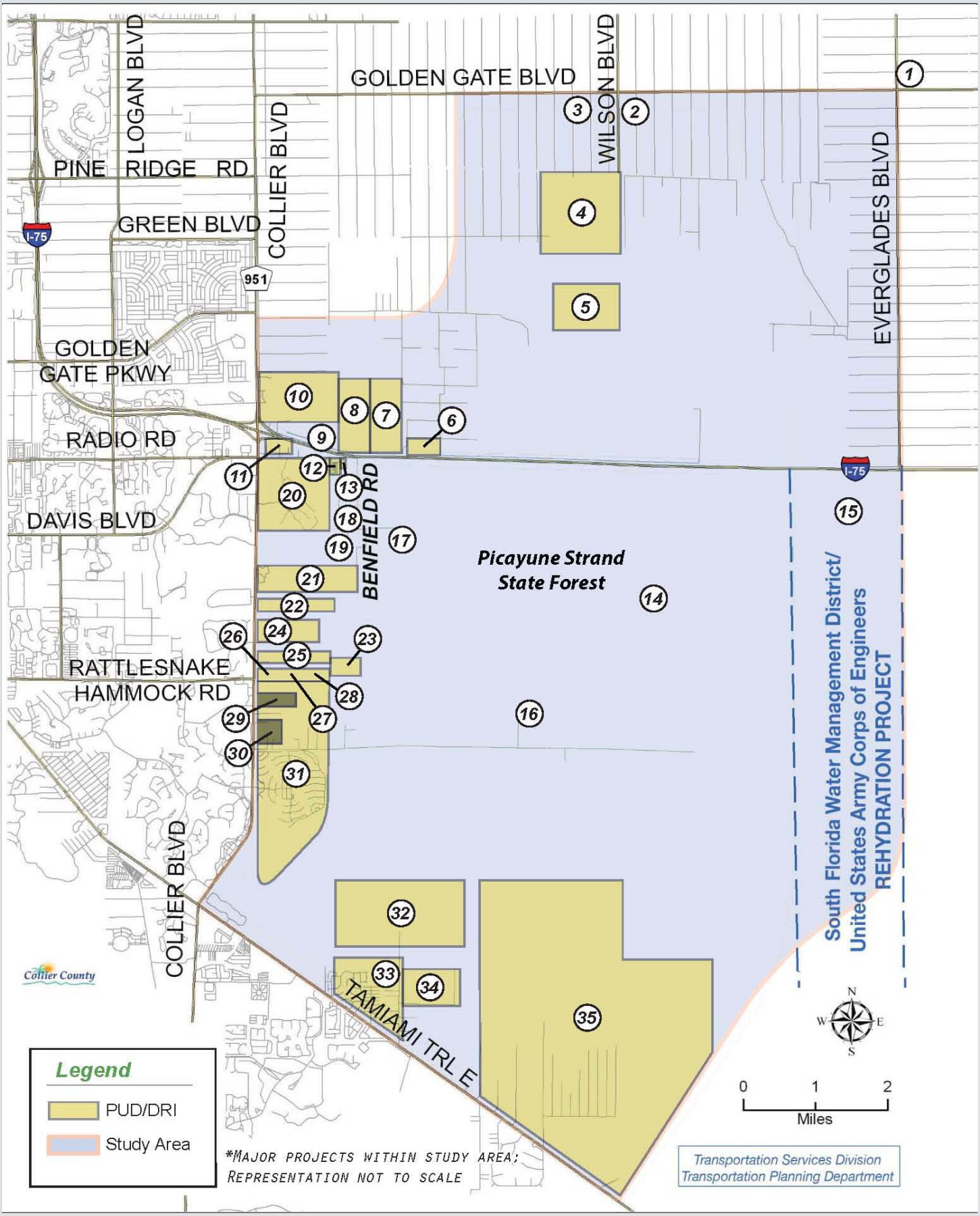

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FIGURE 2.1-1

DRIs and PUDs

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

2.2 Natural Environment

2.2.1 Natural Vegetative Communities

Prior to development of the region, many natural vegetative communities occurred within the study area. In the current condition, the study area still contains these vegetative communities, though some ecosystem integrity and contiguity has been disturbed due to residential, commercial, and industrial development and associated community infrastructure. Information contained in development order submittals, literature research and Geographic Information System (GIS) mapping data was used to assess the vegetative community types typical of the study area.

FLUCFCS Mapping

Detailed vegetation and land uses data were acquired from the South Florida Water Management District (SFWMD) and mapped through the project study area. These land use delineations have not been field verified. An acreage breakdown of the SFWMD Florida Land Use, Cover and Forms Classification System codes (FLUCFCS) for the study area is presented below in Table 2.2-1.

Table 2.2-1
Study Area Land Use Summary

FLUCFCS	Land Use Description	Acreage Within Study Area	Percent Study Area
110	Residential, Low Density	9,463.50	10.80
120	Residential, Medium Density	23.69	0.03
130	Residential High Density	809.86	0.92
140	Commercial and Services	223.74	0.26
150	Industrial	18.49	0.021
160	Extractive	1,105.92	1.26
170	Institutional	68.70	0.08
180	Recreational	457.00	0.52
190	Open Land	673.08	0.77
210	Cropland and Pastureland	6,247.18	7.13
220	Tree Crops	166.84	0.19
240	Nurseries and Vineyards	542.95	0.62
250	Specialty Farms	39.16	0.04
260	Other Open Lands	1,137.82	1.30
310	Herbaceous (Dry Prairie)	1,057.12	1.21
320	Shrub and Brushland	1,877.50	2.14
330	Mixed Rangeland	396.27	0.45
410	Upland Coniferous Forests	5,885.61	6.72
420	Upland Hardwood Forests	176.35	0.20
430	Upland Hardwood Forests Continued	249.87	0.29
510	Streams and Waterways	370.21	0.42
530	Reservoirs	422.50	0.48
610	Wetland Hardwood Forests	12,903.76	14.73
620	Wetland Coniferous Forests	38,168.60	43.57
630	Wetland Forested Mixed	745.53	0.85
640	Vegetated Non-Forested Wetlands	3,324.33	3.80
740	Disturbed Lands	244.54	0.28
810	Transportation	532.81	0.61
820	Communications	21.37	0.02
830	Utilities	242.35	0.28
	Project Totals	87,596.65	100.00

Natural Wetland Communities

Natural wetland communities comprise approximately 64 percent of the total project study area. Wetlands within the study area are primarily forested (610, 620, and 630), totaling nearly 60 percent of the project area, while herbaceous wetland systems (640) comprise the remaining four percent of the study area that is wetland. Appendix 2 (p.A2-1) illustrates mapped wetland communities within the study area. Descriptions typical of these wetland systems follow.

610 – Wetland Hardwood Forests: This designation of wetland forest describes areas which have a minimum crown closure of ten percent, and is dominated by at least 66 percent wetland hardwood canopy species. Examples of wetland hardwood forest communities include swamps comprised of bays, gums, mangroves, titi, willow & elderberry, exotic hardwoods, or wetland hardwoods of mixed composition.

620 – Wetland Coniferous Forests: This designation of wetland forest describes areas which have a minimum crown closure of ten percent, and is dominated by at least 66 percent wetland coniferous canopy species. Examples of wetland coniferous forest communities include swamps comprised of cypress, pond pine, slash pine, Atlantic white cedar, or mixed conifers of mixed composition.

630 – Wetland Coniferous Forests: This designation of wetland forest describes areas of wetland forest in which neither hardwoods nor conifers achieve a 66 percent dominance of the crown canopy composition.

640 – Vegetated Non-forested Wetlands: This designation of wetland includes marshes and seasonally flooded basins and meadows. These communities are usually confined to relatively level, low-lying areas, and are further classified as freshwater marsh, saltwater marsh, wet prairie, emergent aquatic vegetation, submergent aquatic vegetation, or treeless hydric savanna. Sawgrass and cattail are the predominant species in freshwater marshes while spartina and needlebrush are the predominant species in saltwater marsh communities.

Natural Upland Communities

Natural upland communities comprise approximately 11 percent of the total project study area. Uplands within the study area are primarily forested, totaling nearly seven percent of the project area, while herbaceous upland communities comprise the remaining four percent of the study area that are undeveloped uplands. Descriptions typical of these upland communities follow.

310 – Herbaceous (Dry Prairie): This designation of upland describes areas of prairie grasses which occur on non-hydric soils but may be occasionally inundated by water. These grasslands are generally treeless, with a variety of vegetation types dominated by grasses, sedges, rushes, and other herbs including wire grasses with some saw palmetto present.

320 – Shrub and Brushland: This designation of upland describes areas which include saw palmettos, gallberry, wax myrtle, coastal scrub, and other shrubs and brush as the dominant vegetative cover. Generally, saw palmetto is the most prevalent plant cover, intermixed with a wide variety of other woody scrub plant species, as well as other short herbs and grasses.

330 – Mixed Rangeland: This designation of upland describes areas in which saw palmetto is the most dominant vegetation. Common associations of this cover type are fetterbush, tar flower, gallberry, wire grass, and brown grasses. This cover type is usually found on seldom flooded dry sand areas. The cover type is similar to pine flatwoods, but without the pine trees.

2.2.2 Surface Waters

The project lies within the jurisdiction of the South Florida Water Management District (SFWMD). The project study limits lay within several different storm sub-basins throughout Collier County (Figure 2.2-1). Wetlands cover a great portion of the project area. In general, the project area is very flat; most of the area lies below an elevation of nine feet (North American Vertical Datum (NAVD 88)). The ground slope is generally one foot or less per mile. As a result, water accumulates and slowly drains either into the groundwater system or across the land. The majority of drainage is attributed to sheet flow from the north to the south. This area is subject to flooding during the rain season.

There are three types of surface waters within the project area: stormwater ponds associated with residential development, excavated pits associated with mining operations, and a canal which drains through the project area from north of Golden Gate Boulevard between 8th & 10th Street NE, and leaves the study area across CR 951/Collier Boulevard just south of 31st Avenue SW. This canal ultimately drains to Gordon River and Naples Bay.

2.2.2.1 Drainage Basins

The USGS Topographic Quad Maps (Figure 2.2-2) for the project study and FEMA flood zones maps (Figure 2.2-3) are included in this report.

Below is a description of the drainage basins within the project study area. Much of the basin descriptions and delineations were taken from the Collier County Floodplain Management Plan (April 2005), by Collier County.

- Main Golden Gate System - This basin is located in the northern portion of the study area and is north of I-75. The basin drains into the Main Golden Gate Canal that flows west and crosses CR-951/Collier Boulevard about one mile north of I-75. The canal drains into Naples Bay. The entire area of this system is about 110 square miles. This system is divided into nine sub-basins. Only three of these sub-basins are included within the project boundaries and are described below.
    - Main Golden Gate Canal Basin - Approximately 49 square miles of residential and agricultural land is included within this sub-basin. This basin acts as both the collector and discharge area for the entire Golden Gate System. Water within this sub-basin flows to the southwest. This sub-basin is located in the north-central area of the project.
    - Cypress Canal Basin - This sub-basin contains about 17 square miles of residential land and is located in the northwestern portion of the project area. Water flows towards the southwestern area of the sub-basin.

- 951 Canal Central Basin - This sub-basin contains one square mile of residential land and water flows to the south. This sub-basin is located along the eastern boundary of the project, north of I-75. The canal is located adjacent to and east of CR 951/Collier Boulevard. It connects to the Main Golden Gate Canal just north of I-75.

- Henderson Creek Basin - This basin is approximately 49 square miles in size and consists of mainly wetlands. The basin area is very flat. It is located in the west-central portion of the study area and is a major flow-way drain. Water flows southwest through the I-75 Borrow Canal, under I-75, into Henderson Creek, and eventually to the Rookery Bay Estuary.
- Faka Union System - This system is located in the eastern portion of the study area. It is approximately 151 square miles and is divided into four sub-basins. Only one sub-basin is within the project limits and is described below. Water flows south with ultimate discharge into the Faka Union Bay south of US 41.
- Miller Canal Basin - This basin includes 30 square miles of uninhabited residential land. Water sheet flows into the Miller Canal and eventually discharges into the Faka Union Bay Estuary. This sub-basin also receives a portion of water runoff from the I-75 Borrow Canal. The Miller Canal flows south and connects to the Faka Union Canal about two miles north of US 41.
- Southern Coastal Basin - Most of the land area in this basin is undeveloped. It consists of four drainage sub-basins that are described below. This basin is located in the southeastern portion of the project area.
  - US 41 Outfall Swale No. 1 - This sub-basin is about five square miles and is mainly for agricultural use. This area is very flat. The main drainage in this area is through the US 41 Borrow Canal which is along the north side of US 41. Several agricultural cross drains allow water to drain south under US 41 from the borrow canal and ultimately into Naples Bay.
  - US 41 Outfall Swale No. 2 - This basin is four square miles in size and contains both residential and agricultural land. The area is very flat and therefore, floods very easily. Water collects in the US 41 Borrow Canal, and like Swale No. 1 this sub-basin also drains through several cross drains under US 41. Once the water passes US 41 it is restricted by small roadside ditches and then ultimately water discharges into Naples Bay.
  - Seminole Park Outlet Basin - This sub-basin is about 28 square miles in size and is located in the southern portion of the project. Water flows from US 41, through Seminole State Park, into Hammock Creek, and finally into Palm Bay. Some additional water also flows from US 41 into the Blackwater River.
  - Tamiami Trail Canal - This sub-basin consists of six square miles of rural land and wetlands. The majority of this area is wetlands. This sub-basin occupies the southeast corner if the project. During periods of heavy rainfall, stormwater from the Miller Canal overflows into this basin. Water sheet flows through cross drains underneath US 41.

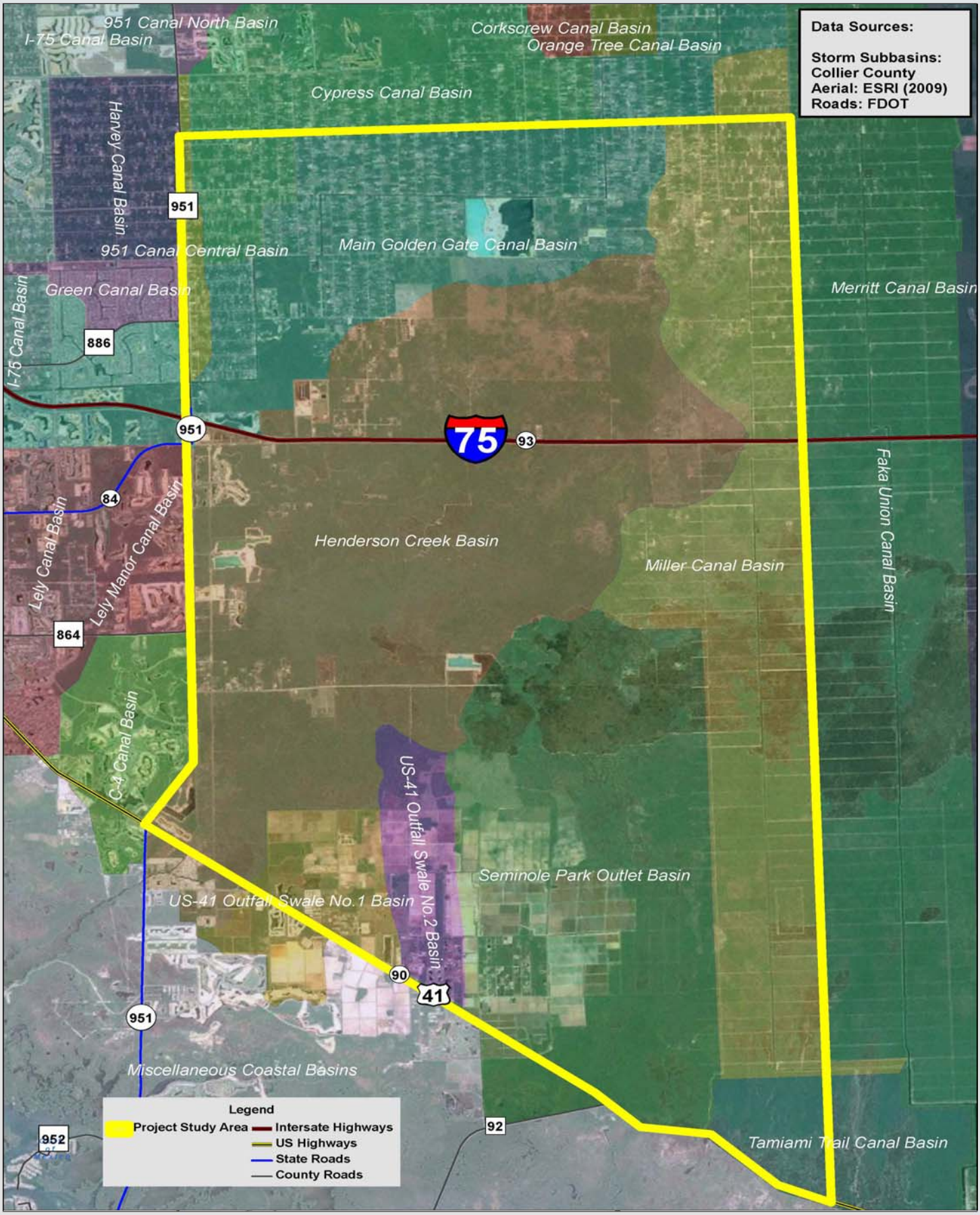

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FIGURE 2.2-1

Storm Sub Basins

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

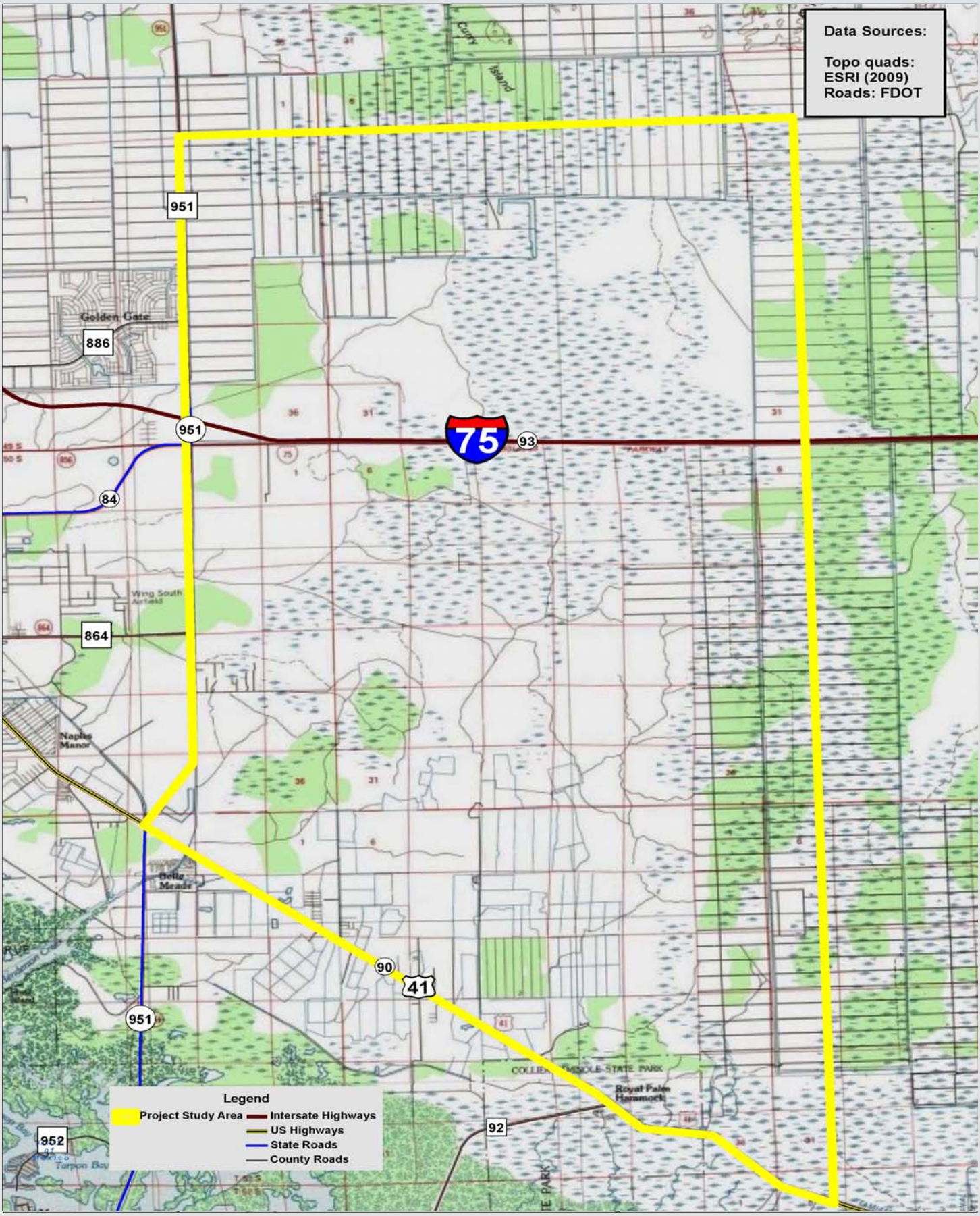

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FIGURE 2.2-2

Topographic Quad Map

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

2.2.2.2 Stormwater Management Facilities

Stormwater management facilities within the project study area reside along I-75 at the interchanges and within private developments and golf courses. Many of the developments have been required to obtain SFWMD Environmental Resource Permits in order to construct.

There are numerous existing drainage structures including cross drains, bridges, canals and control structures within the project study limits. Table 2.2-2 is a summary of the existing cross drains within the project corridor. The stationing corresponds to the mile markings from the straight-line diagrams along the I-75 corridor and the US 41 corridors.

Table 2.2-2
Existing Cross Drain Inventory

Structure ID	Station	Size	Type	Length (ft)	Bridge Number
US-41 1	20.934		Bridge	100’	144
US-41 2	21.659		Bridge	26’	024
US-41 3	22.034		Bridge	26’	025
US-41 4	22.684		Bridge	36’	026
US-41 5	23.008	3-42”	Cross Drain	70’	
US-41 6	23.394	3-42”	Cross Drain	70’	
US-41 7	23.813	2-42”	Cross Drain	70’	
US-41 8	24.092	1-42”	Cross Drain	70’	
US-41 9	24.414	3-42”	Cross Drain	70’	
US-41 10	24.769	1- 6’X4’	Box Culvert	70’	
US-41 11	25.326	2- 9’X5’	Box Culvert	50’	
US-41 12	25.659	3-42”	Cross Drain	65’	
US-41 13	26.426	3-42”	Cross Drain	74’	
US-41 14	27.118	3-42”	Cross Drain	70’	
I-75 1	50.405		Bridge	244’	196
I-75 2	50.412		Bridge	205’	195
I-75 3	50.056	2-18”	Cross Drain	80’	
I-75 4	49.903	2- 5’X3’	Box Culvert	120’	
I-75 5	49.619	1-30”	Cross Drain	110’	
I-75 6	49.505	1-36”	Cross Drain	100’	
I-75 7	49.489	1-36”	Cross Drain	105’	
I-75 8	49.353	1-30”	Cross Drain	105’	
I-75 9	49.339	1-36”	Cross Drain	110’	

Table 2.2-2 (cont.)
Existing Cross Drain Inventory

Structure ID	Station	Size	Type	Length (ft)	Bridge Number
I-75 10	49.185	2-10'X6'	Box Culvert	125'	
I-75 11	48.843	1-15"	Cross Drain	108'	
I-75 12	48.580	1-15"	Cross Drain	108'	
I-75 13	48.316	1-15"	Cross Drain	108'	
I-75 14	48.051	1-12'X6'	Box Culvert	112'	
I-75 15	47.785	1-12'X6'	Box Culvert	112'	
I-75 16	47.553	1-15"	Cross Drain	108'	
I-75 17	47.323	1-15"	Cross Drain	108'	
I-75 18	47.090	1-15"	Cross Drain	108'	
I-75 19	46.857	2-12'X6'	Box Culvert	112'	
I-75 20	46.629	1-15"	Cross Drain	108'	
I-75 21	46.401	1-15"	Cross Drain	108'	
I-75 22	46.174	1-15"	Cross Drain	108'	
I-75 23	45.947	1-15"	Cross Drain	108'	
I-75 24	45.720	2-12'X6'	Box Culvert	112'	
I-75 25	45.488	1-15"	Cross Drain	108'	
I-75 26	45.255	1-15"	Cross Drain	108'	
I-75 27	45.024	1-15"	Cross Drain	108'	
I-75 28	44.792	2-12'X6'	Box Culvert	112'	
I-75 29	44.558	1-15"	Cross Drain	108'	
I-75 30	44.324	1-15"	Cross Drain	108'	
I-75 31	44.092	2-12'X6'	Box Culvert	112'	
I-75 32	43.862	1-15"	Cross Drain	108'	
I-75 33	46.636	2-12'X6'	Box Culvert	112'	
I-75 34	43.381	1-15"	Cross Drain	108'	
I-75 35	43.129	1-15"	Cross Drain	108'	
I-75 36	42.876	1-15"	Cross Drain	108'	
I-75 37	42.622	2-48"	Cross Drain	108'	
I-75 38	42.439	1-15"	Cross Drain	112'	
I-75 39	42.257	1-15"	Cross Drain	108'	
I-75 40	42.215		Bridge	100'	214
I-75 41	42.212		Bridge	100'	001
I-75 42	41.975	1-15"	Cross Drain	108'	
I-75 43	41.760	2-48"	Cross Drain	112'	
I-75 44	41.504		Bridge	36'	285
I-75 45	41.495	1-15"	Cross Drain	108'	

2.2.3 Outstanding Florida Waters

Two Outstanding Florida Waters (OFWs), listed in 62-302 Florida Administrative Code (F.A.C.), occur within the study area. These OFWs are the Collier-Seminole State Park and the Save Our Everglades CARL Project Megasite. A portion of Collier-Seminole State Park occurs in the southeast portion of the study area. A portion of the Save our Everglades CARL Project Megasite occurs in the east of the study area, south of I-75 and just west of Miller Boulevard. Neither of these OFWs are Aquatic Preserves.

2.2.4 Floodplains

In accordance with Executive Order 11988, "Floodplain Management", USDOT Order 5650.2 "Floodplain Management and Protection", and Chapter 23, Code of Federal Regulations, Part 650A, impacts to floodplains from the construction of the proposed improvements were considered. The latest FEMA approved studies from 2005 were used in this report.

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) Community Panel Numbers located within the project study area are as follows:

- Collier County: 12021C0425G, 12021C0450G, 12021C0610G, 12021C0620G, 12021C0620G, 12021C0650G

Based upon the FEMA maps listed above, the majority of the study area lies within Zone X (Figure 2.2-3). Zone X corresponds to the 500-year floodplain, and to areas of 100-year flooding where average depths are less than one foot, areas to 100-year flooding where the contributing drainage area is less than one square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

The other zones within the study area are:

- Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.
- Zone AE corresponds to the 100-year floodplains determined in the FIS by detailed methods. Most of the southern portion of the project area is located within Zone AE.
- Zone A corresponds to the 100-year floodplains determined by the FIS approximate methods. No base flood elevations or depths are shown in this zone.

Floodplain Involvement

The construction of the drainage structures proposed for this project will not cause changes in flood stage and flood limits. These changes will need to be designed so that they will not result in any significant adverse impacts on the natural and beneficial floodplain values or any significant changes in flood risk or damage. During the design phase, the South Florida Water Management District (SFWMD) and Army Corps of Engineers (ACOE) will need to review these changes and concur with the determination that there will be no significant impacts.

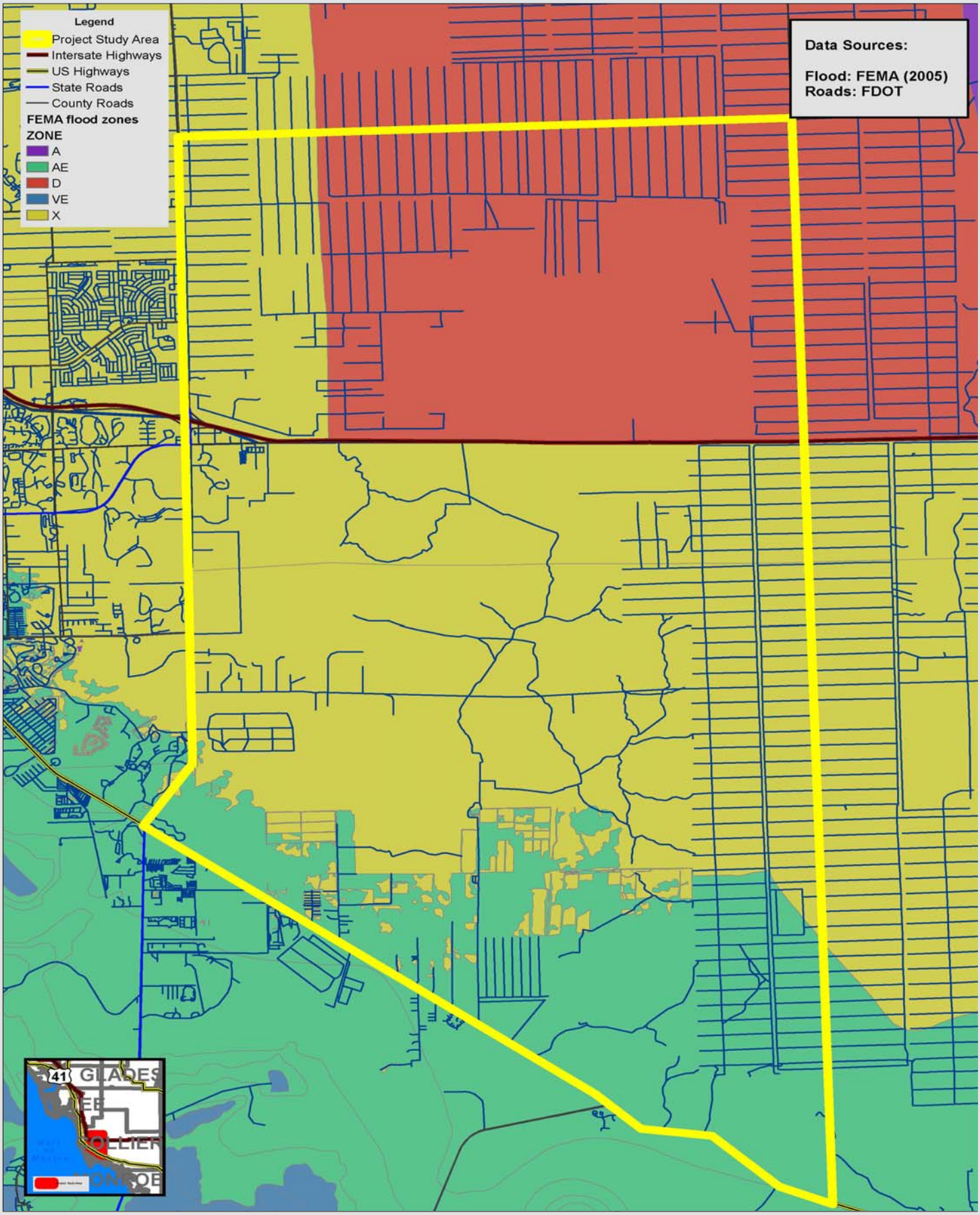


FIGURE 2.2-3

FEMA Flood Zones

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

2.2.5 Protected Wildlife

Literature resources were consulted regarding documented listed species occurrences in the vicinity of the alternatives and within the study area. The literature sources reviewed included Florida's Endangered Species, Threatened Species and Species of Special Concern, Official Lists (FFWCC 2007); Florida Atlas of Breeding Sites for Herons and Their Allies (Runde *et al*. 1991); the Florida Panther (*Puma concolor coryi*) Habitat Preservation Plan (HPP) (Logan *et al*. 1993); Kautz *et al.* 2006 (Landscape Conservation Map) for the Florida Panther; and the USFWS database for recorded locations of the Florida panther, Florida black bear (*Ursus americanus floridanus*), bald eagle (*Halieatus leucocephalus*), Florida scrub jay (*Aphelocoma coerulescens*), and wading bird rookeries in Collier County.

The database information for the Florida black bear is current to 2007, the bald eagle information is current to October 2008, and wading bird rookeries information is from 1999. An aerial photograph showing the locations of listed species occurrences based on the FFWCC database of documented occurrences of listed species and FFWCC Florida panther telemetry data current through June 2008 can be found in Appendix 2; p.A2-3.

The Florida Atlas of Breeding Sites for Herons and Their Allies was referenced for the location of breeding colonies for both listed and non-listed wading birds including, but not limited to, the little blue heron (*Egretta caerulea*), tri-colored heron (*Egretta tricolor*), snowy egret (*Egretta thula*), white ibis (*Eudocimus albus*), wood stork (*Mycteria americana*), and roseate spoonbill (*Ajaia ajaja*). There were no breeding colonies located within or in the vicinity of the study area.

The USFWS Draft Standard Local Operating Procedures for Endangered Species (SLOPES) Wood Storks (USFWS 2002) recognizes a 30 kilometer (18.6 mile) zone surrounding a wood stork colony boundary as a core foraging area. According to the FFWCC data (2006), three wood stork rookeries (Colony Nos. 619161, 619018, and 619310) encompass the majority of the study area. This is illustrated in Appendix 2; p.A2-4. Therefore, the alternatives are located within three core foraging areas. The wood stork is a state and federal listed endangered species.

The FFWCC database for bald eagle nests shows three bald eagle nest protection zones within the study area. The USFWS and the FFWCC generally establish a 660 foot protection zone around an eagle nest unless activity of similar scope is nearby. The bald eagle is protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

The entire study area is located within the USFWS consultation area for the red-cockaded woodpecker (*Picoides borealis*) (RCW). This is shown in Appendix 2; p.A2-5. Numerous RCW locations have been documented within the study area and in the North Belle Meade area, most notably within the City Gate DRI and adjacent to I-75. According to the City Gate habitat conservation plan, mitigation for impacts to RCW habitat included the habitat restoration of 324± acres within the Picayune Strand State Forest (PSSF) and the land purchase of 102± acres within the PSSF. Additionally, the Habitat Conservation Plan requires the establishment of five recruitment clusters and the translocations of sub-adult RCWs from City Gate to the PSSF. The RCW is listed as a species of special concern with the FFWCC and as endangered with the USFWS.

Although there are no FFWCC documented occurrences of the Florida scrub jay or the Everglade snail kite (*Rostrahmus sociabilis plumbeus*), the respective USFWS consultation areas encompass portions of the study area, as shown in Appendix 2; p.A2-6,7. The Florida scrub jay is a state and federal threatened species and the Everglades snail kite is a state and federal endangered species.

The radio telemetry data from 1981 to June 2008 identifies telemetry points from 19 panthers within the corridor study area. A figure illustrating this is found in Appendix 2; p.A2-8. Additional Global Positioning System (GPS) panther telemetry data was acquired from the FFWCC for the purposes of this study and is included in Appendix 2; p.A2-9. This information illustrates the use of the study area from February 2006 to January 2009 by six panthers (Nos. 146, 147, 148, 149, 156, and 158) equipped with GPS collars. All but one panther (No. 156) are documented in South Belle Meade. Panther No. 156 has learned to utilize an underpass and has been frequently traveling under I-75 between South and North Belle Meade. The Florida panther is listed as an endangered species with the FFWCC and the USFWS. Table 2.2-3 below summarizes the current statuses (FFWCC 2008) of the six aforementioned panthers within the study area.

Table 2.2-3
GPS Collared Panthers within the Study Area Boundary (FFWCC 2008)

Panther No.	Sex	Estimated Age	Use Area*
FP146	Male	6	PSSF
FP147	Male	4	BCNP/FSPSP/PSSF/Rookery Bay
FP148	Female	5.5	PSSF
FP149	Female	4	PSSF
FP156	Male	4.5	PSSF-North Belle Meade
FP158	Female	3.5	PSSF-CSSP

*BCNP = Big Cypress National Preserve; CSSP = Collier Seminole State Park; FSPSP = Fakahatchee Strand Preserve State Park; PSSF = Picayune Strand State Forest.

Based on general knowledge of the land uses and habitat types within the study area, it is anticipated that during the permitting phase of the preferred alignment, coordination with the FFWCC may also be required for the gopher tortoise (*Gopherus polyphemus*); Eastern indigo snake (*Drymarchon corais couperi*); listed wading birds such as white ibis, tri-colored heron, little blue heron, snowy egret, and limpkin (*Aramus guarana*); and the Big Cypress fox squirrel (*Sciurus niger avicennia*).

Listed wildlife species documented or known to occur within the study area and in the study area are summarized in Table 2.2-4.

Table 2.2-4
Potential Listed Wildlife Species Occurrences for Alternatives

Scientific Name	Common Name	Designated Status	
		FFWCC	USFWS
Reptiles			
Drymarchon corais couperi	Eastern indigo snake	T	T
Gopherus polyphemus	Gopher tortoise	T	-
Birds			
*Haliaeetus leucocephalus**	Bald eagle	-	-
Mycteria americana	Wood stork	E	E
Picoides borealis	Red-cockaded woodpecker	SSC	E
Aphelocoma coerulescens	Florida scrub jay	T	T
Eudocimus albus	White ibis	SSC	-
Egretta tricolor	Tri-colored heron	SSC	-
Egretta caerulea	Little blue heron	SSC	-
Egretta thula	Snowy egret	SSC	-
Aramus guarana	Limpkin	SSC	-
Rhostrhamus sociabilis	Everglades snail kite	E	E
Mammals			
Puma concolor coryi	Florida panther	E	E
Ursus americanus floridanus	Florida black bear	T	-
Sciurus niger avicennia	Big Cypress fox squirrel	T	-

FFWCC – Florida Fish and Wildlife Conservation Commission, USFWS – U.S. Fish and Wildlife Service
E – Endangered, T – Threatened, SSC – Species of Special Concern
*Protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act

A listed species survey was not included within the scope of this assessment. A comprehensive listed species survey will be required prior to permitting to identify the listed species and their habitats impacted by the preferred alignment.

2.2.6 Conservation Lands

Five major conservation tracts occur entirely or partially within the study area; Rookery Bay National Estuarine Research Reserve, Collier-Seminole State Park, Picayune Strand State Forest, Ten Thousand Islands National Wildlife Refuge, and the Nancy Payton Preserve. Conservation Lands comprise approximately 41 percent of the overall study area. A summary table of conservation lands within the project area is provided in Table 2.2-5. Public Conservation Lands are mapped in Appendix 2; p.A2-2

Table 2.2-5
Conservation Lands Summary within Project Study Area

Name	Managing Entity	Property Owner	Total Conservation Acres	Acres within Study Area	Percent of Total Conservation Acres	Percent of Study Area
Collier Seminole State Park	FDEP - Division of Recreation & Parks	TIITF	7,271.8	**1,276.13**	17.55%	**1.46%**
Nancy Payton Preserve	Collier County	Collier County	113.1	**113.1**	100.00%	**0.13%**
Picayune Strand State Forest	FDACS - Division of Forestry	TIITF	77,962.66	**34,216.71**	43.89%	**39.06%**
Rookery Bay National Estuarine Research Reserve	FDEP - Office of Coastal and Aquatic Managed Areas	TIITF & FL Audubon Society, TNC, Collier County	110,559	**50.24**	0.05%	**0.06%**
Ten Thousand Islands National Wildlife Refuge	United States Fish and Wildlife Service (USFWS)	DOI & TIITF	35,033.6	**57.72**	0.16%	**0.07%**
				35,713.90		**40.77%**

TIITF = Trustees of the Internal Improvement Trust Fund, TNC = The Nature Conservancy,
FDEP = Florida Department of Environmental Protection, DOI = United States Department of the Interior,
FDACS = Florida Department of Agriculture and Consumer Services

2.3 Physical Environment

2.3.1 Soils and Geology

Nearly 98 percent of the project study area soils types are mapped by the National Resource Conservation Service (NRCS) Collier County soils maps as hydrologic group B/D or D soils. Approximately 80 percent of these soils are considered hydric soils, according to the Hydric Soils of Florida Handbook (4th ed. 2007). Table 2.3-1 provides the percentage of soil types by hydric group within the study area. Soils not assigned to a particular hydrologic group (N/A) were primarily Urban Land or Open Water.

Table 2.3-1
Soils by Hydrologic Group
Within Project Study Area

Hydrologic Group*	Percent Project Area
B	0.04%
C	0.80%
B/D	76.50%
D	21.12%
Not Applicable	1.54%
TOTAL	**100%**

*Group B: Silt loam or loam
Group C: Sandy clay loam
Group D: Clay loam, silty clay loam, sandy clay, silty clay, or clay

With the significant composition of hydric soils, much of the study area is likely to contain high levels of muck, which could pose serious challenges to construction of a roadway and stormwater management facilities. Site specific geotechnical research within the final alternative alignment will be necessary to determine the soil suitability for such a project prior to design and construction.

2.3.2 Contamination

A contamination screening of the study area was conducted to identify known or potential contamination sites and to consider their potential to impact the proposed project. The objective of the contamination screening is to develop a general characterization of environmental concerns based on readily available information and site observations. To meet this objective, the scope of services included the following: a visual reconnaissance of the property and of the surrounding area to observe site conditions relative to environmental concerns to help evaluate if obvious adjacent land use might suggest recognized environmental conditions; a review of available historic aerial photographs, topographical maps, and soil surveys; and a review data from federal and state agencies.

The contamination screening evaluation was performed in an effort to identify known or potential contamination problems based on reasonably ascertainable documentation and information. However, environmental conditions may still exist on, or adjacent to, the project alignments that were not identifiable through this scope of services. Sampling of the soil, rock, or groundwater for hazardous materials along the project alignment was not a part of the screening, nor was testing of the soil for radon gas or testing existing structures, if any, for lead-based paint or asbestos-containing materials.

Site reconnaissance was completed and government environmental lists were reviewed. A total of 75 sites were identified as potential hazardous and/or petroleum contamination concerns within the study area. The potential effects of these sites on the proposed Tier 1

and Tier 2 corridor alternatives are discussed in Section 3.3.2 and Section 4.3.3, respectively.

2.4 Social Environment

2.4.1 Community Facilities

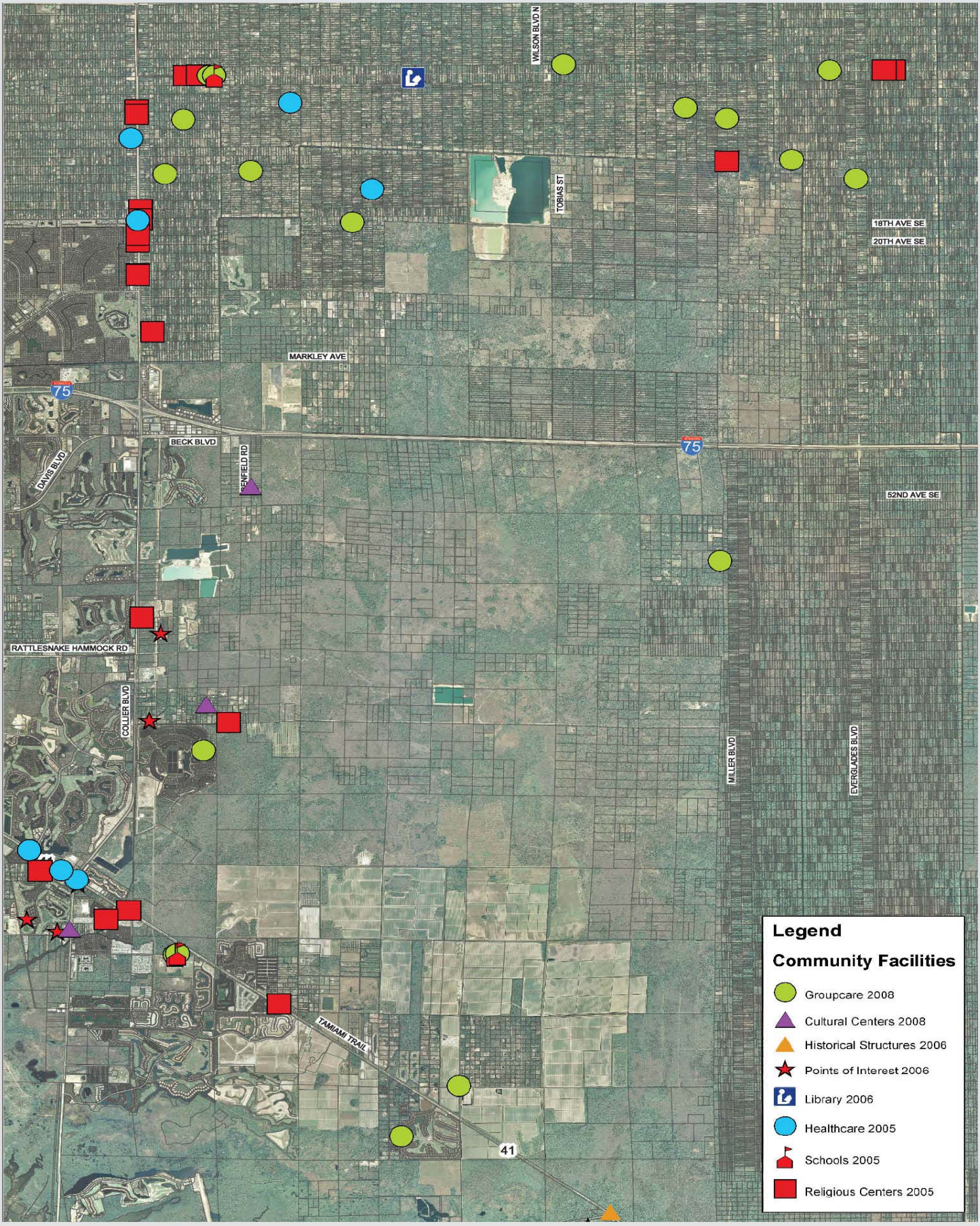
A field review was conducted to identify community facilities within the study area. GIS data was used to assess project specific information provided in FDOT's Environmental Screening Tool (EST). The EST is a part of the Efficient Transportation Decision Making (ETDM) process, providing agencies the opportunity to comment on the level of perceived effect a project may have on environmental factors. The community facilities identified are shown in Figure 2.4-1.

The State Historic Preservation Officer (SHPO) identified the Bay City Walking Dredge as a historical resource in the EST. The machine is located in the Collier-Seminole State Park. One library and one medical facility identified in the EST were not fully constructed (still in early stages of construction). These facilities are located on Lely Cultural Parkway. The only field verified library was the Estates Branch Library (also located adjacent to a fire station) on Golden Gate Boulevard West. Campus of Care is located directly across from Lely Cultural Parkway and CR 951/Collier Boulevard. This facility is expanding with new construction and offers educational services, rehabilitation, and community outreach all through First Assembly Ministries. The Florida Sports Park is located just south of the Campus of Care facility, and is home to popular local swamp buggy and air boat races. Bus stops are available at regular intervals for Collier Area Transit (CAT) services.

The extension of Benfield Road is identified in the Collier LRTP. Local growth patterns, potential for transportation disadvantaged planning challenges, community impacts and environmental justice issues due to demographics were all listed as interests of the environmental agencies. A Habitat for Humanity housing project is approximately half way down US 41 along the project boundary. Several rest stops signed as parks are located along this stretch of US 41 as it emerges from the Everglades.

Parks listed in GIS data for the project area were confirmed in the field review. See Figure 2.4-2, Natural Areas. Rookery Bay is located southwest of the project area, but signage is apparent along US 41. Rookery Bay is a National Estuarine Research Reserve. Comments regarding the appropriateness of the project in this area were expressed by United States Fish and Wildlife Service (USFWS), National Marine Fisheries (NMF), Florida Department of Environmental Protection (FDEP) and Florida Fish and Wildlife Conservation Commission (FFWCC) in the ETDM analysis. FDEP has stated interest in preserving the natural qualities of the Picayune Strand State Forest, Rookery Bay and Collier-Seminole State Park. The comments concerning the Picayune Strand State Forest address points such as fragmentation (bisecting trails, providing new vector channels for invasive species), stormwater, management and use concerns, hydrology changes, wetlands, water quality and perceived safety conflicts with regard to smoke from scheduled burns and new barriers for wildlife movement potentially increasing the chance for road kills. A desire for the roadway to use existing urbanized areas and

previously disturbed lands is prevalent in most comments addressing the natural environment. Conservation and Recreation Lands (CARL) in Collier County include Belle Meade – a CARL Priority area listed for acquisition, over half of which has already been acquired. Overlying the Belle Meade area is the Henderson Creek/Belle Meade Restoration area. Land use impact credit trading is used in this area, known as Transfer of Development Rights (TDR) with designated sending and receiving areas.



AIM Engineering & Surveying, Inc.

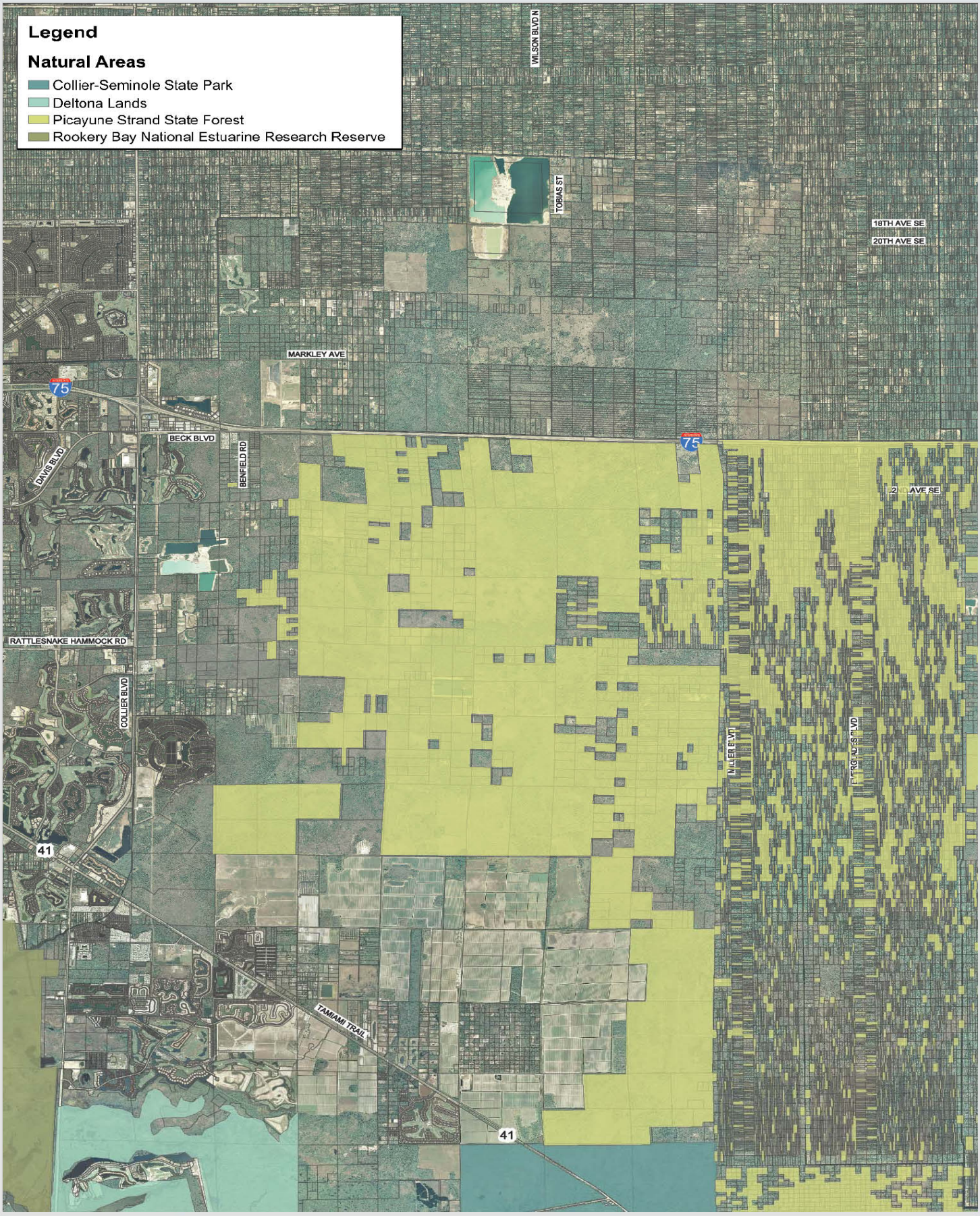
FIGURE 2.4-1

Community Facilities

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

WILSON BOULEVARD extension BENFIELD ROAD corridor Study
Collier County

N W E S



AIM Engineering & Surveying, Inc.

FIGURE 2.4-2

Natural Areas

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

2.4.2 Archaeological and Historical Resources

Archaeological Consultants, Inc. (ACI) conducted background research for the Wilson Boulevard Extension/Benfield Road Corridor study in western Collier County, Florida. The study area is currently defined as an area bounded by CR 951/Collier Boulevard on the east, US 41 on the south, Everglades Boulevard on the west, and Golden Gate Boulevard on the north (Figure 1; Section 1.0, page 2).

ACI's scope of work included a review of sites listed in the National Register of Historic Places (NRHP) and the Florida Master Site File (FMSF); an examination of Collier County historical/archaeological predictive models and other regional studies, cultural resource assessment survey reports for previous work in the vicinity, published books and articles, unpublished manuscripts, maps and other relevant data. The purpose of the research was to: 1) identify all known archaeological sites and historic resources within the study area which are listed, determined eligible, or considered potentially eligible for listing in the NRHP, and 2) to determine the potential for unrecorded archaeological or historic sites within the study area.

Given known patterns of aboriginal settlement within the study area (discussed in detail in Appendix 3, pp.A3-15, A3-16, discrete locales were identified as having a moderate to high potential for the occurrence of prehistoric archaeological sites (shown in Appendix 3; pp.A3-24 – A3-30). The remainder of the project area was considered to have a low potential for prehistoric archaeological sites. Research suggests that midden sites are common in the general region, as are short-term campsites evidenced by artifact scatters. Prehistoric sites in the study area typically date to the Late Archaic to Glades period cultures. The site probability areas correspond to the slightly elevated terrain, especially adjacent to natural drainage-ways and amidst wetlands dispersed within the study area.

Based on the results of the historical research, the potential for historic period archaeological sites was considered moderate to high within the vicinity of previously recorded sites with historic components, such as in areas once occupied by a 19th century fort, battle ground and/or trails, as well as 20th century camps and rail lines (shown in Appendix 3; pp.A3-24 – A3-30); elsewhere the potential for historic archaeological resources was considered low. Similarly, background research suggested a limited potential for the discovery of standing buildings constructed prior to 1958 within the study area. The number of potential structures is contingent upon anticipated project construction dates, as well as the viewshed of construction, which may impact sites beyond the study boundary.

Because a number of prehistoric sites have been recorded in the general vicinity, and in environments similar to that of the study area, it is the opinion of ACI that a cultural resource assessment survey will be required if state or federal dollars are used, and/or if a South Florida Water Management District permit is required. The resulting Cultural Resource Assessment Survey Report should meet the completeness and sufficiency requirements set forth in Chapter 1A-46, Florida Administrative Code, and the effort would have to include systematic subsurface testing in high to moderate ZAPs, and judgmental testing in low ZAPs. Also, any building 50 years of age or older within the

study area would have to be recorded in the FMSF and evaluated for NRHP eligibility. In conclusion, few areas will present cultural resource issues.

The report can be found in Appendix 3.

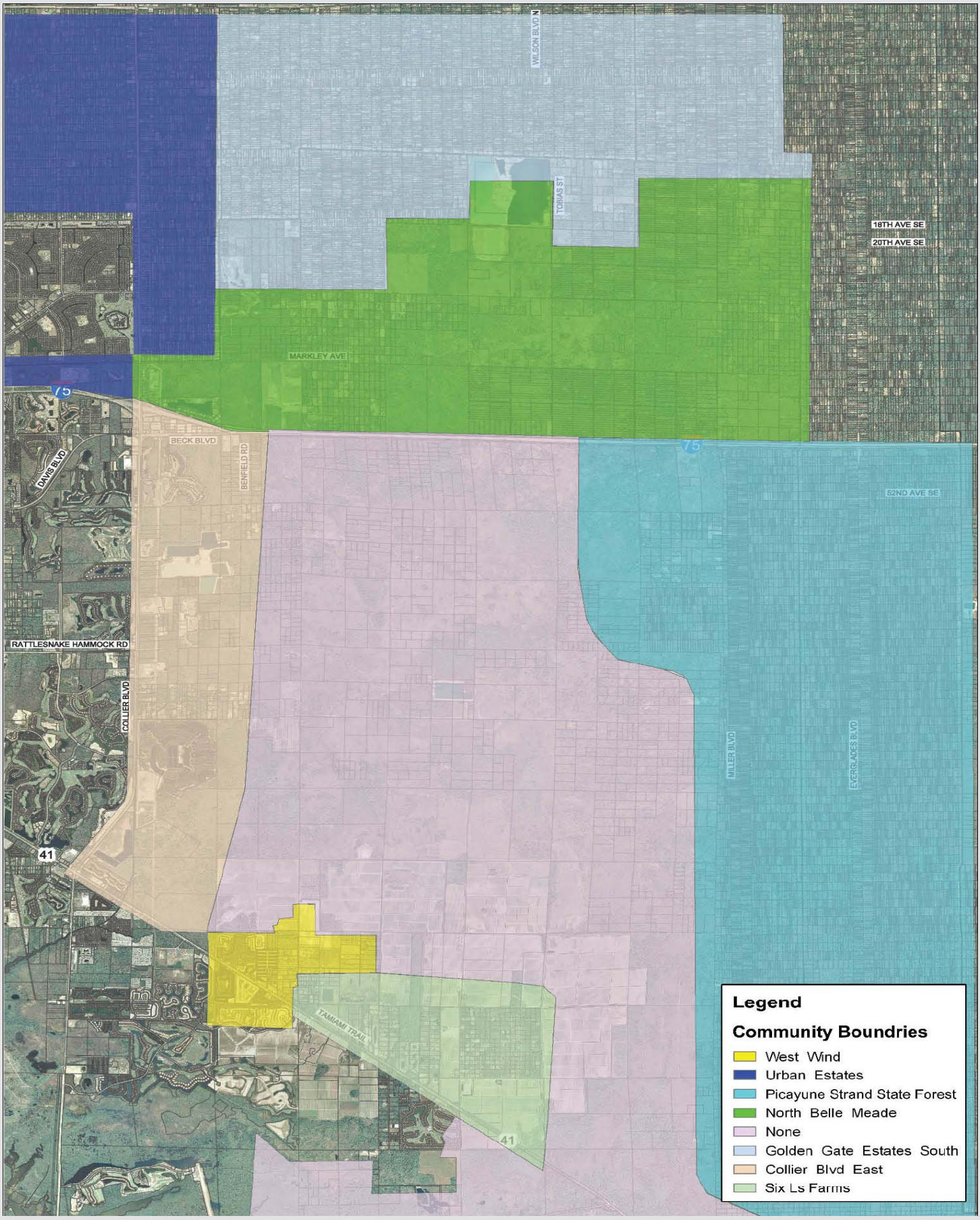
2.4.3 Existing Developments

The project area includes the planning communities of Golden Gate, Urban Estates, Rural Estates and Royal Fakapalm, as illustrated Figure 2.4-3, Community Boundaries. The Royal Fakapalm Planning Community extends through most of the project area located south of I-75 and east of CR 951/Collier Boulevard to SR 29. More than half of the project is within this planning community, and constitutes nearly one quarter of the total Royal Fakapalm Planning Community area. The Rural Estates Planning Community includes the northern portion of the study area, north of I-75 to CR 846 and generally east of CR 951/Collier Boulevard to approximately Everglades Boulevard. The Golden Gate Planning Community is a well studied and documented planning area, but only a small portion of the project is within this community (near the CR 951/Collier Boulevard and I-75 interchange). A very small portion of the project is within the Urban Estates Planning Community. The area south of I-75 and west of CR 951/Collier Boulevard is also referred to as Belle Meade.

The majority of the project falls in a very large census tract (Census tract 111.02) and includes the unique area of Everglades City. See Figure 2.4-4, 2000 Census Data. Census tracts involved in the project area are as follows:

- Census Tract 111.02 (south of I-75 and east of CR 951/Collier Boulevard to the county line)
- Census Tract 104.13
- Census Tract 104.14

Census data for this area includes a large minority population as well as includes a large amount of land that is not within the study area. Further specific data will need to be collected in cooperation with Collier County and possibly the City of Naples, to determine the specific demographics for the study area. Collier County data takes into account areas with highly fluctuating migrant worker and seasonal populations. None of the study area for this project is within those specified Seasonal Population Projection areas.



AIM Engineering & Surveying, Inc.

FIGURE 2.4-3

Community Boundaries

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

WILSON BOULEVARD extension BENFIELD ROAD corridor Study
Collier County

N W E S

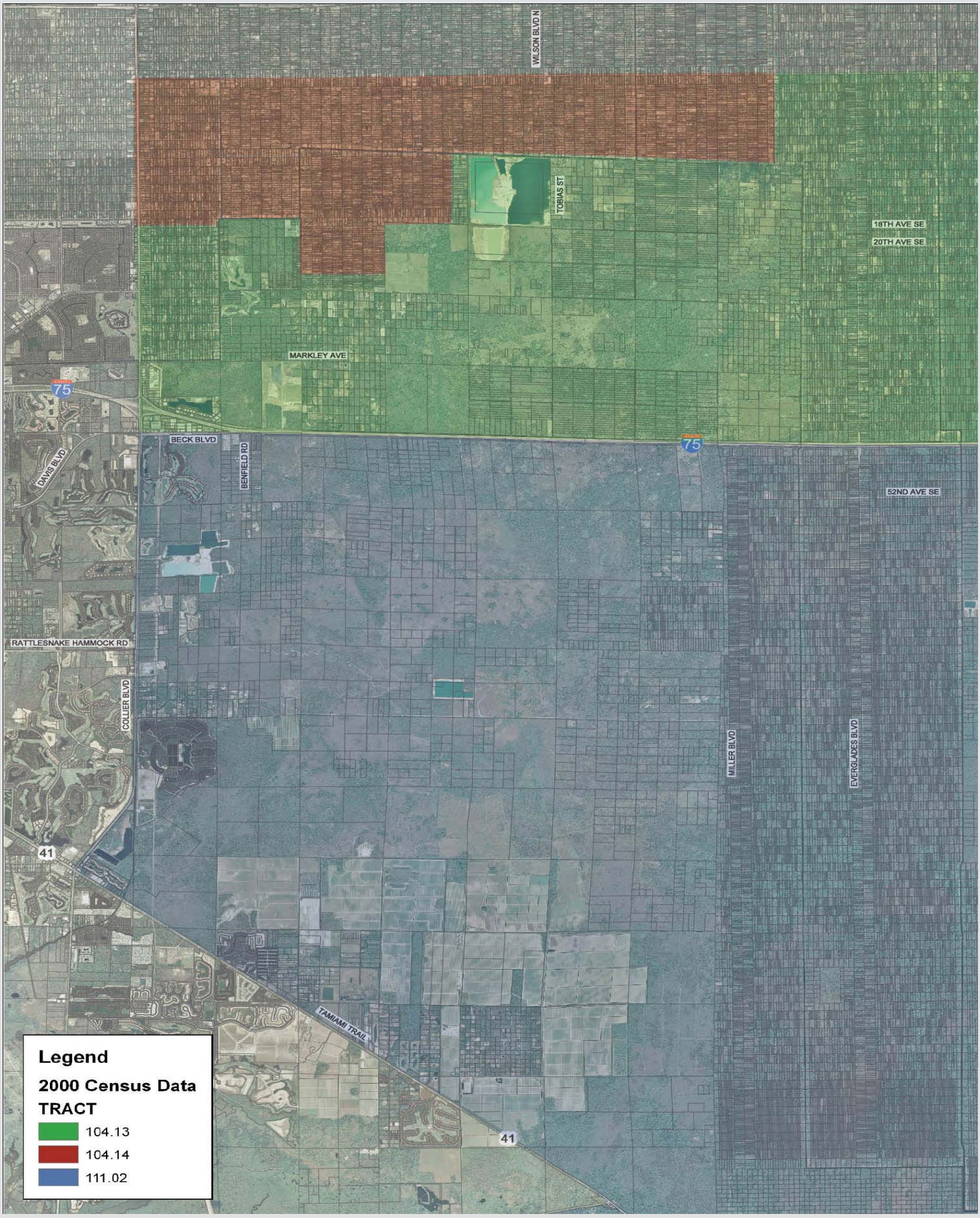


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FIGURE 2.4-4

2000 Census Data

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

WILSON BOULEVARD extension BENFIELD ROAD corridor Study
Collier County

N W E S

2.5 Existing Traffic Conditions

The objective of this section was to summarize then existing 2007 traffic conditions occurring within the study boundaries. Both roadway link and intersection operating conditions have been assessed. The analysis utilized available traffic count information and considered historical count data.

As part of the analysis, traffic data was obtained, recommended design traffic characteristics were established, and the existing geometry of the intersections evaluated. These are described in the following sections.

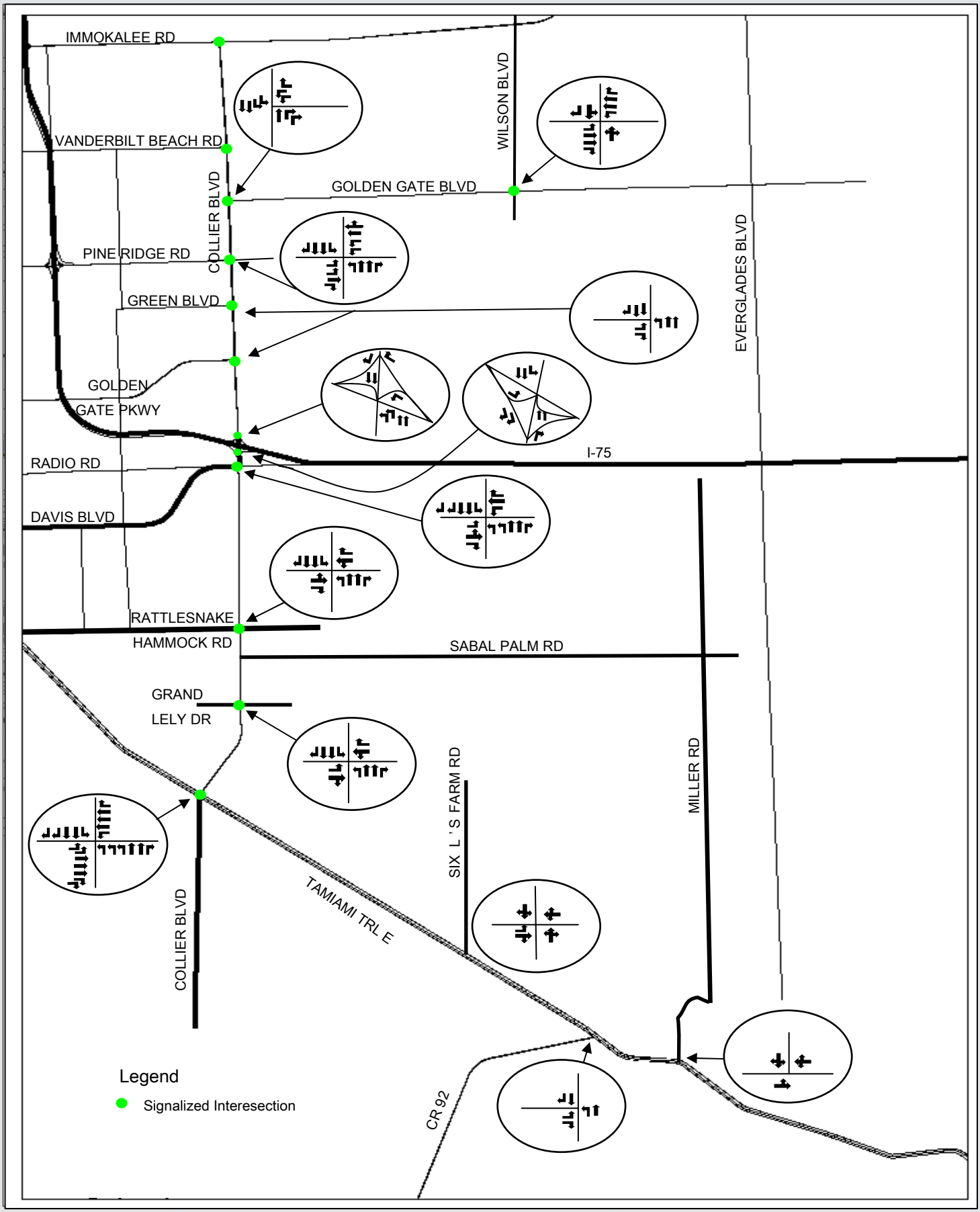
2.5.1 Existing Intersection Geometry

Figure 2.5-1 provides the existing geometry for all the intersections evaluated in the study. These are:

- CR 951/Collier Boulevard at US 41
- CR 951/Collier Boulevard at Grand Lely Drive
- CR 951/Collier Boulevard at CR 864/Rattlesnake Hammock Road
- CR 951/Collier Boulevard at CR 856/Davis Boulevard
- CR 951/Collier Boulevard at I-75
- CR 951/Collier Boulevard at Green Boulevard
- CR 951/Collier Boulevard at CR 896/Pine Ridge Road
- CR 951/Collier Boulevard at Golden Gate Boulevard
- CR 951/Collier Boulevard at Golden Gate Parkway
- US 41/Collier Boulevard at Miller Boulevard*
- US 41/Collier Boulevard at CR 92
- US 41/Collier Boulevard at Six L's Farms Road
- Golden Gate Boulevard at Wilson Boulevard

(*Traffic count data not available)

The existing geometry is important, as it was considered as one of the factors in determining potential geometric enhancements to accommodate future travel demand.



DRMP

FIGURE 2.5-1

Existing Intersection Geometry

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

2.5.2 Existing Roadway Data Collection

Roadway data was derived from the Collier County Traffic Operations Department's 2006 Average Daily Traffic Report.

Traffic count data from this source is older than the existing year (2007). In order to adjust the volumes to existing year conditions, a growth rate was developed from existing historical count data within the study area. A trends analysis was run on each location with available historical data. The growth rate was determined using only those locations where an R^2 value greater than 80 percent was calculated. Table 2.5-1 is a summary of the historical data used to determine this rate. A weighted linear growth rate of 5.46 percent per year was applied to these counts in order to estimate existing year (2007) conditions.

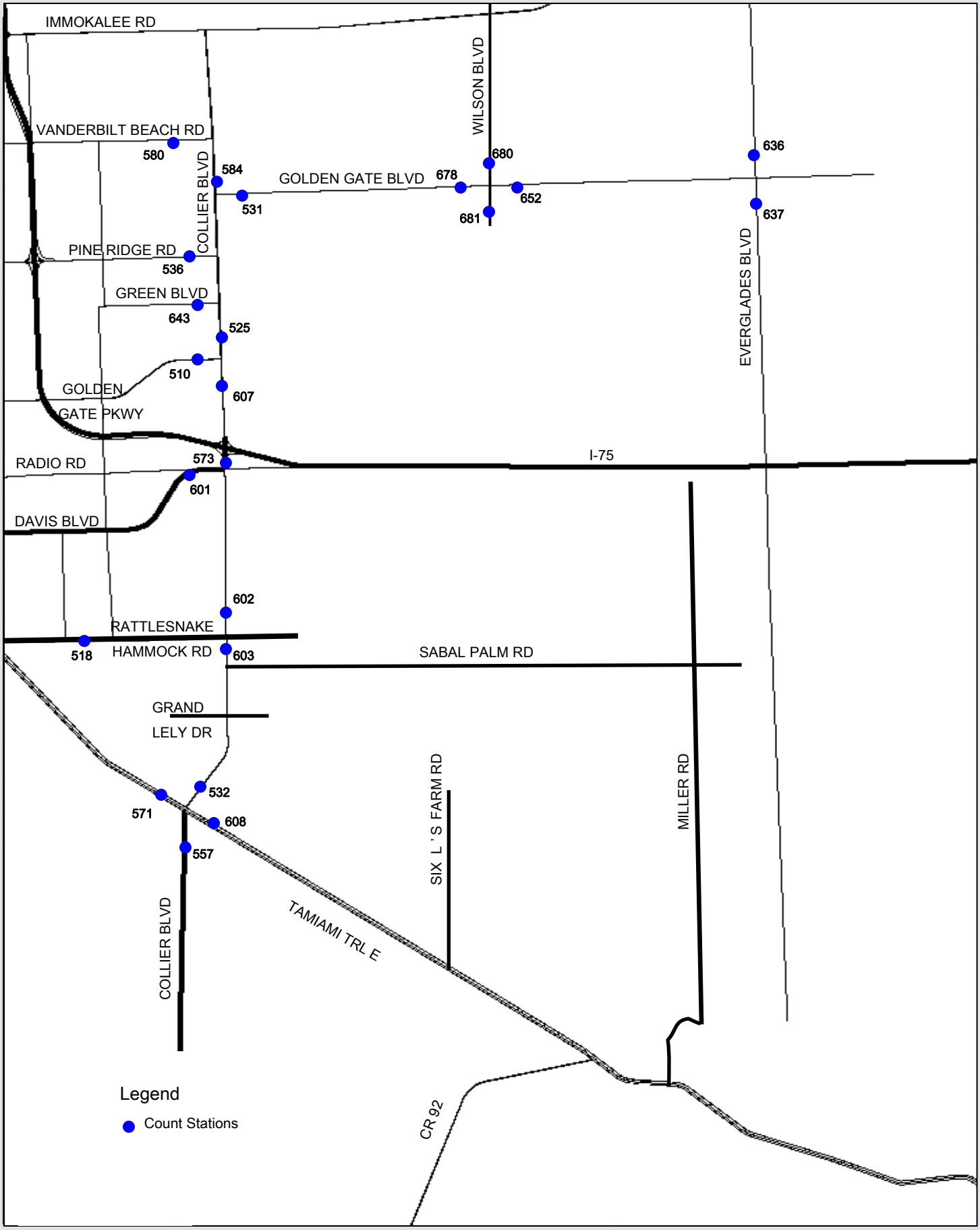
Figure 2.5-2 illustrates the locations of all the count stations. AADT volumes at the aforementioned stations for 2006 and 2007 are depicted in Figures 2.5-3 and 2.5-4, respectively.

Table 2.5-1
Historical Count Data

County Count Station	Location	2002 AADT	2003 AADT	2004 AADT	2005 AADT	2006 AADT	Trend Growth Rate	R^2
510 (605)	CR 886/Golden Gate Parkway - west of CR 951/Collier Boulevard	18,500	18,600	19,100	17,800	19,000	0.11%	0.4%
518	CR 864/Rattlesnake Hammock Road - west of CR 951/Collier Boulevard	9,100	10,100	10,900	10,100	10,100*	3.58%	44.3%
525	CR 951/Collier Boulevard - north of CR 886/Golden Gate Parkway	26,500	27,400	29,600	31,900	32,000	4.31%	94.6%
531	Golden Gate Boulevard - east of CR 951/Collier Boulevard/SR 951	20,300	25,400	27,600	29,200	30,800	7.46%	94.6%
532	CR 951/Collier Boulevard - north of US 41	22,800	23,900	21,900	23,100	28,300	3.83%	54.1%
536	CR 951/Collier Boulevard - north of Pine Ridge Road	31,000	33,500	35,400	37,000	36,900	4.82%	92.8%
557	CR 951/Collier Boulevard - south of US 41	34,300	34,100	35,600	37,400	39,200	2.95%	90.7%
571	US 41/SR 90 - west of CR 951/Collier Boulevard	27,100	27,400	27,800	39,100	30,400	2.65%	94.3%
573	CR 951/Collier Boulevard - north of SR 84/Davis Boulevard	45,500	46,600	53,900	56,200	57,300	4.96%	90.4%
580	CR 862/Vanderbilt Beach Road - west of CR 951/Collier Boulevard	11,400	11,200	12,100	13,600	15,000	6.56%	88.7%
584 (655)	CR 951/Collier Boulevard - north of Golden Gate Boulevard	18,000	18,500	18,500	19,300	20,100	2.51%	91.6%
602	CR 951/Collier Boulevard - north of CR 864/Rattlesnake Hammock Road	30,300	31,600	33,900	38,700	39,800	5.57%	92.1%
603	CR 951/Collier Boulevard - south of CR 864/Rattlesnake Hammock Road	27,700	27,900	31,500	34,000	34,200	5.00%	92.5%
607	CR 951/Collier Boulevard - south of CR 886/Golden Gate Parkway	22,400	23,200	25,800	29,200	30,000	3.28%	30.5%
608	US 41/SR 90 - east of CR 951/Collier Boulevard	12,600	12,800	13,000	15,000	15,200	3.89%	79.3%
636	Everglades Boulevard - north of Golden Gate Boulevard	4,400	5,800	6,500	8,100	8,100	11.42%	94.2%
637	Everglades Boulevard - south of Golden Gate Boulevard	4,300	4,900	5,700	5,900	6,800	8.96%	97.6%
643 (642)	Green Boulevard - west of CR 951/Collier Boulevard	7,800	7,900	8,600	8,700	8,500	2.54%	69.1%
652	Golden Gate Boulevard - east of Wilson Boulevard	12,500	15,800	17,200	19,700	19,100	8.42%	87.7%
678	Golden Gate Boulevard - west of Wilson Boulevard	16,800	20,700	23,300	27,300	27,200	9.62%	93.9%
680	Wilson Boulevard - north of Golden Gate Boulevard	5,400	7,400	8,300	10,300	10,300	11.66%	93.7%
681	Wilson Boulevard - south of Golden Gate Boulevard	400	400	400	400	400	0.00%	0.0%

NOTES:
1. (XXX) County Count Station Duplicate
2. Only growth rates with R^2 greater than 80% were used in the Average Growth Rate calculation.
* AUIR Volume

Average Growth Rate: CR 951	4.30%
Average Growth Rate: US 41	2.65%
Average Area Growth Rate	6.30%
Weighted Avg Area Growth Rate	5.46%



DRMP

FIGURE 2.5-2

Count Station Locations

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

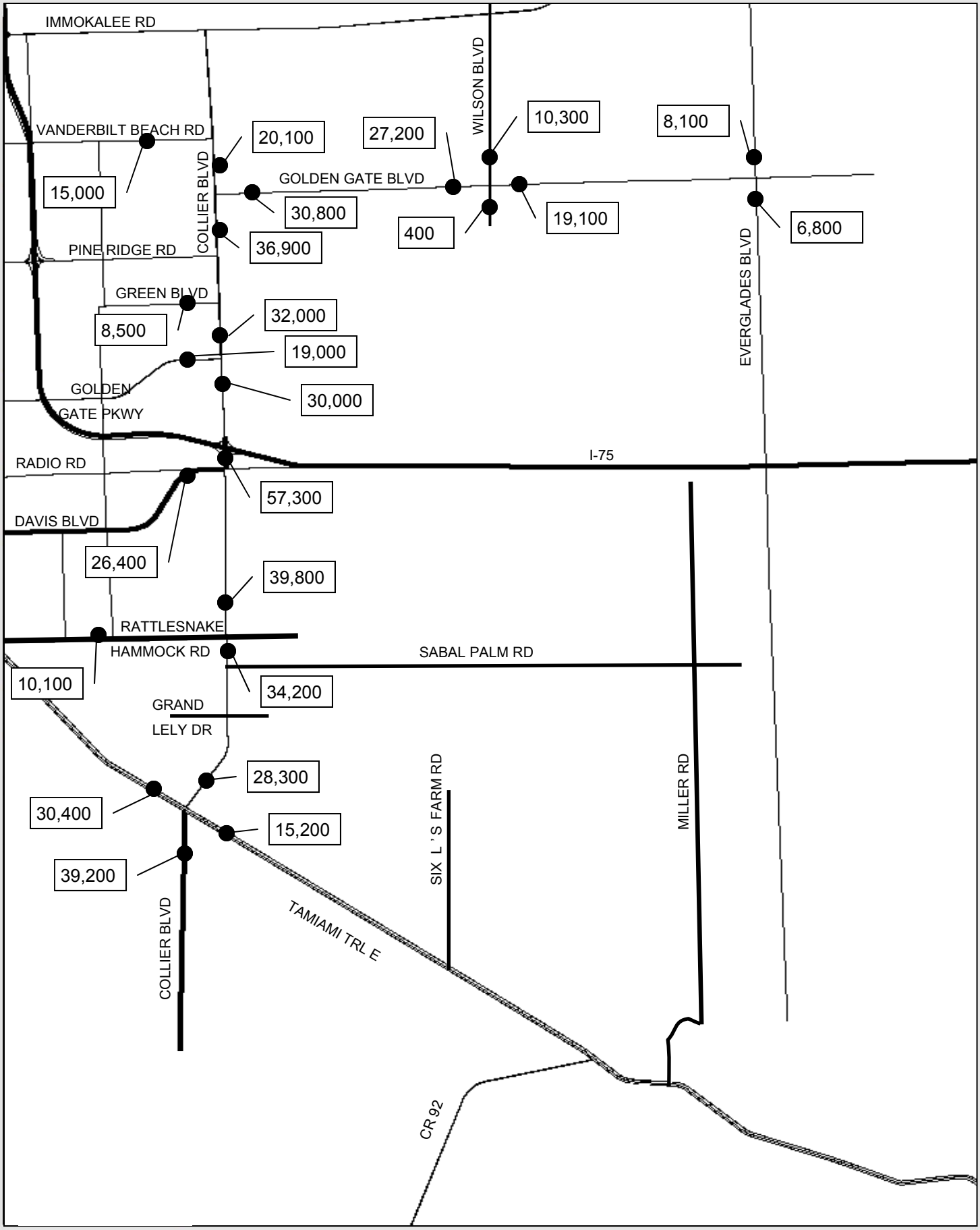


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FIGURE 2.5-3

2006 Average Daily Traffic

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

WILSON BOULEVARD extension BENFIELD ROAD corridor Study
Collier County

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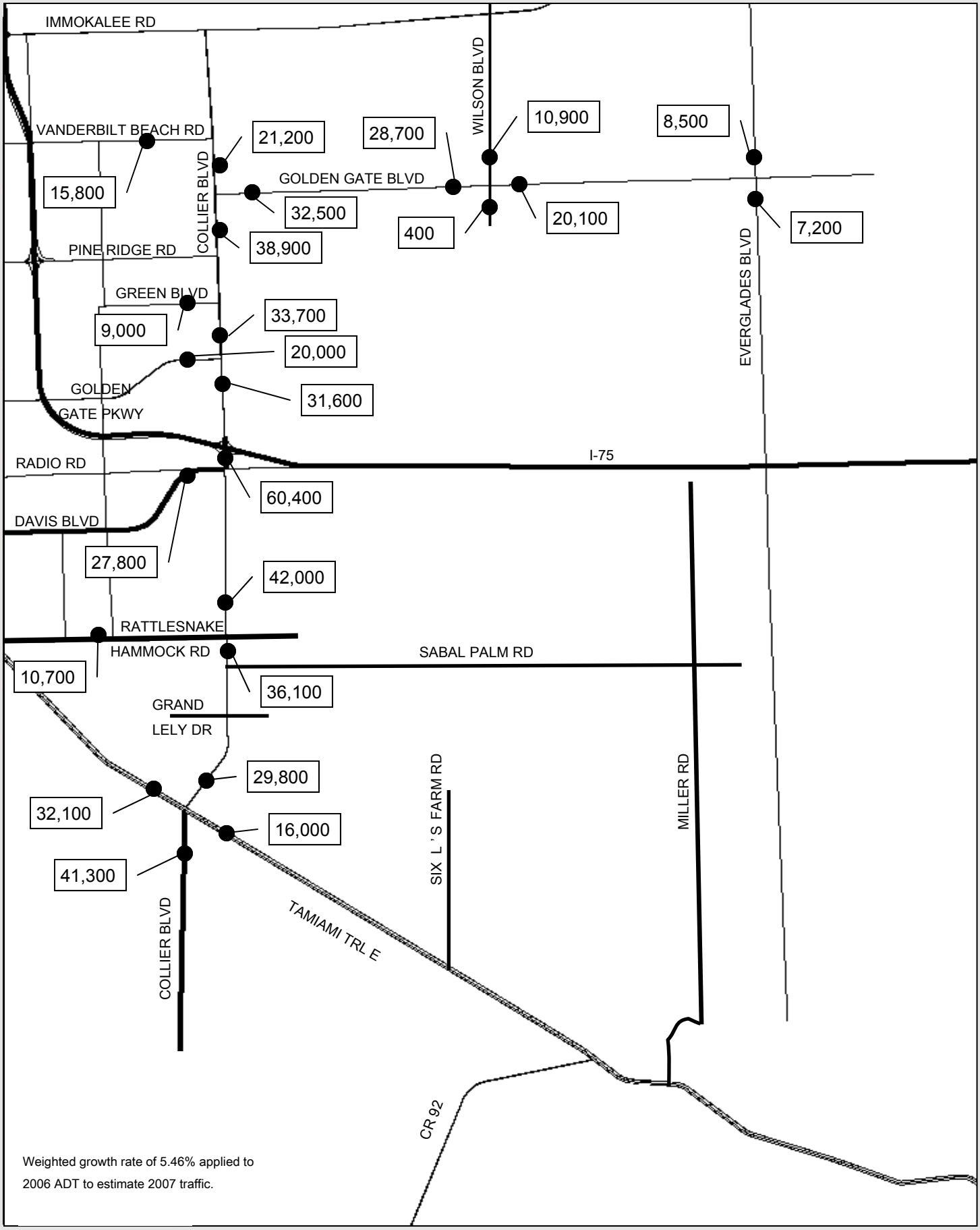

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FIGURE 2.5-4

Existing 2007 Average Daily Traffic

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

2.5.3 Existing Intersection Data

Intersection turning movement data was derived from several sources:

- Toll-Rattlesnake DRI traffic monitoring report (Vanasse & Daylor, LLP, July 2006)
- Lely Resort PUD traffic monitoring report (David Plummer & Assoc., May 2007)
- Wilson Boulevard Extension Corridor Study (Wilson Miller, May 2005)
- US 41 PD&E Final Project Traffic Report (GMB, Jan. 2006)
- I-75/SR 951 Interchange Concept Re-Evaluation Technical Memorandum (FDOT District One, May 2006)

No count data older than year 2004 was used in assessing operating conditions. As with roadway data, turning movement counts were adjusted by the same weighted linear growth rate of 5.46 percent in order to estimate existing year traffic (Appendix 1: Existing Conditions Report). Figures 2.5-5A and 2.5-5B summarize the existing turning movement data adjusted to existing year 2007.

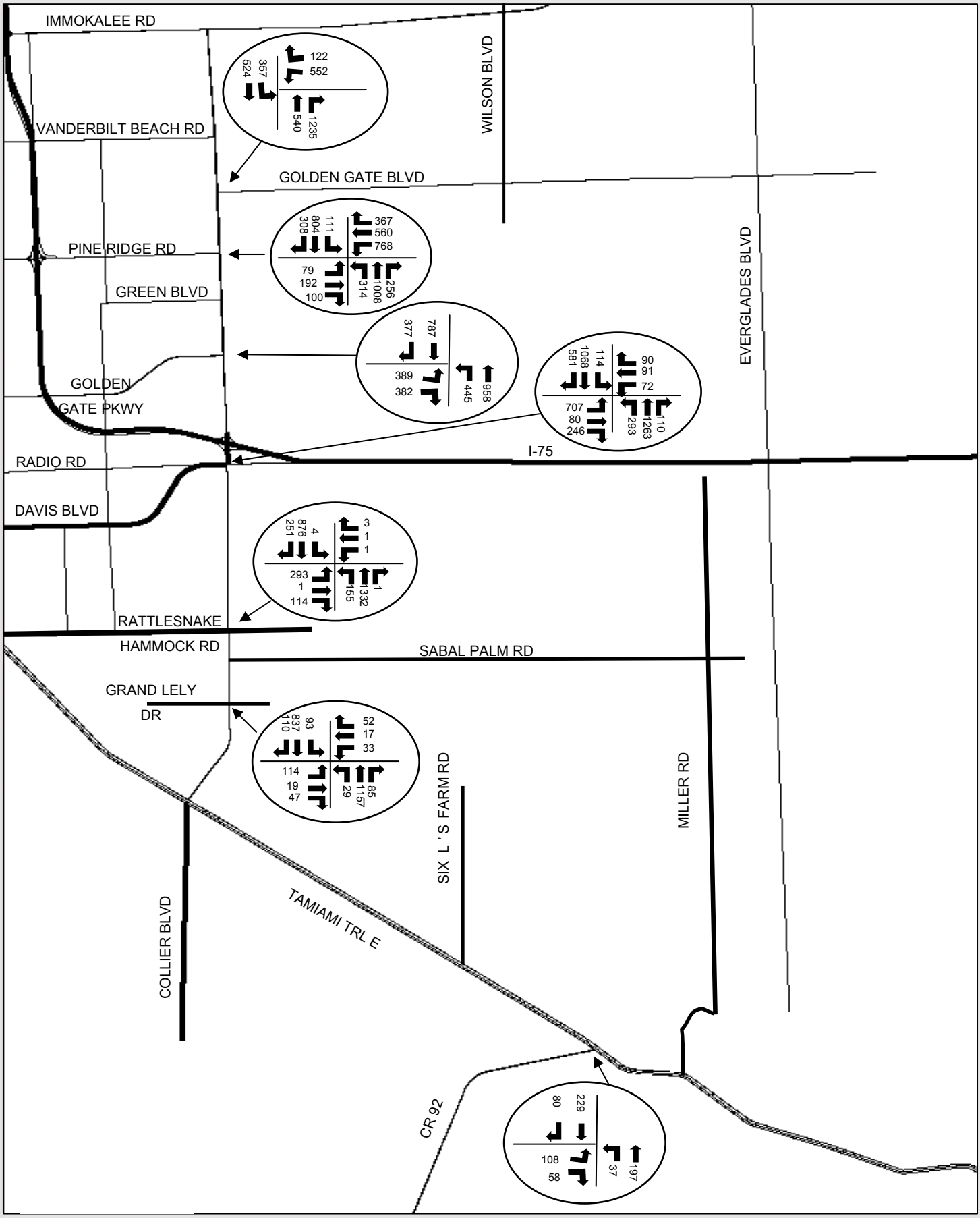

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FIGURE 2.5-5A

Existing PM Peak Hour Turning Movements

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

WILSON BOULEVARD extension BENFIELD ROAD corridor Study
Collier County

N W E S

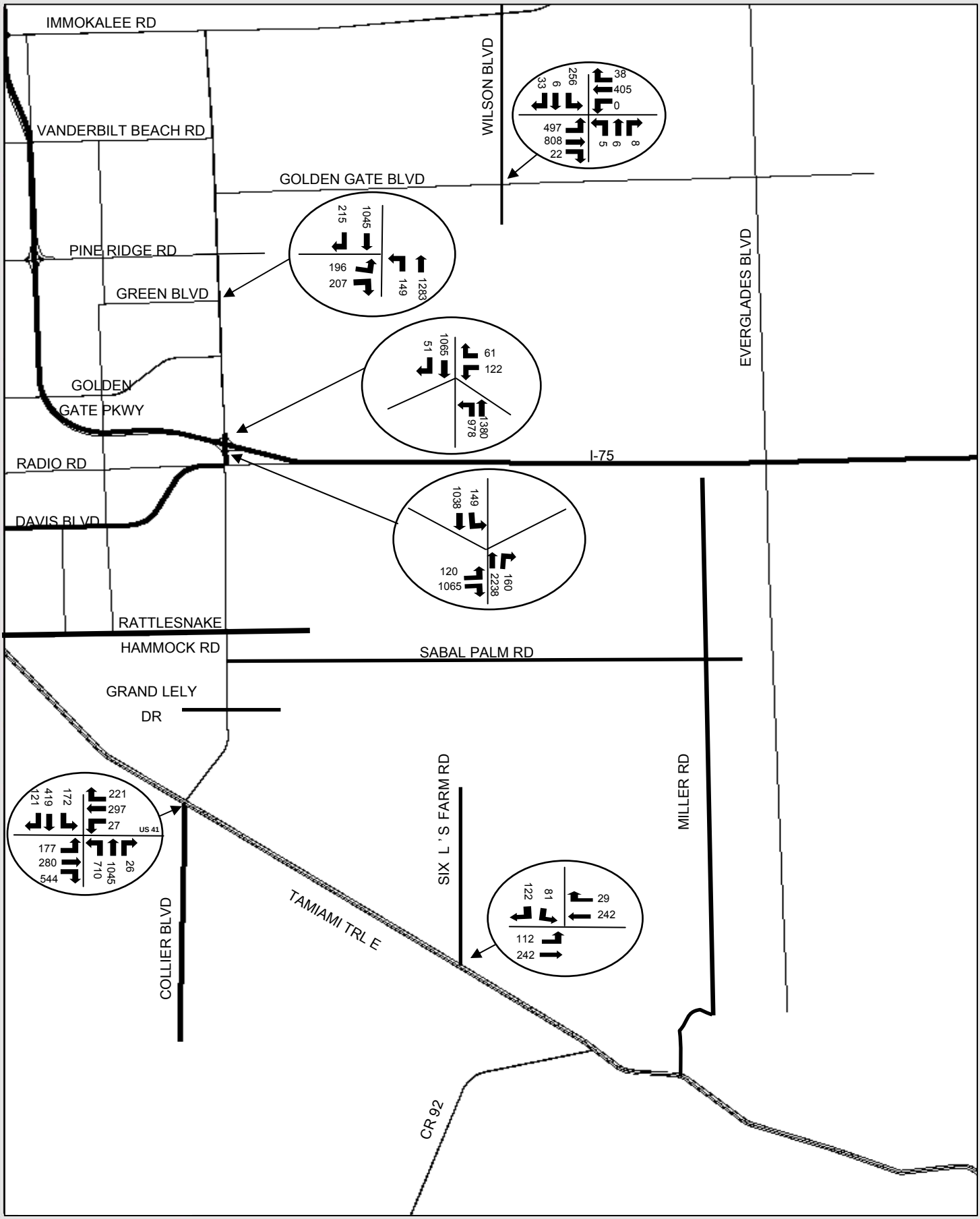

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FIGURE 2.5-5B

Existing PM Peak Hour Turning Movements (contd.)

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

WILSON BOULEVARD extension BENFIELD ROAD corridor Study
Collier County

N W E S

2.5.4 Traffic Characteristics

In order to develop future year design hour projections and operating conditions, traffic characteristics for the study area were developed. Specifically, these characteristics include the 30th highest hour percentage, or K factor (K30), directional distribution factor (D), and truck percentage (T). Each characteristic is described below.

The K30 factor was reviewed from the 2006 FDOT Traffic Information DVD on counted facilities within the study area. Information in the report included the following locations:

- Station 14: US 41 west of CR 951/Collier Boulevard
- Station 157: SR 951 south of US 41
- Station 190: CR 951 north of Davis Boulevard
- Station 193: Davis Boulevard west of CR 951/Collier Boulevard
- Station 194: US 41 east of CR 951/Collier Boulevard

The range of K30 from the state count stations was 8.64 to 11.27. As this area is primarily rural, recommended factors for the rural condition were initially considered. However, as the development density in this area increases, the K factor is likely to drop as high traffic volumes are spread out over longer time periods. An adjusted value of 10.5 falls within the acceptable ranges recommended by the FDOT for both urban and rural arterials and is more likely to reflect future conditions within the corridor. Therefore, the K30 of 10.5 was recommended for projections and analysis.

Similarly, the directional distribution factor, D, was derived from the 2006 FDOT Traffic Information DVD. The calculated D of 57.1 falls within the FDOT acceptable ranges for both a rural and urban arterial, and reflects conditions on the corridor. Therefore, the D of 57.1 was used for projections and analysis.

Truck data was also collected from the 2006 FDOT Traffic Information DVD. An average calculated truck factor (T24) of ten percent was decreased by half to a (T) of five percent for projections and analysis. This reduction is based on the assumption that half as many trucks travel the roadways during the peak hour (Project Traffic Forecasting Handbook, 2002).

Table 2.5-2 provides the recommended design factors for the development of design traffic. Worksheets summarizing the calculation of the design characteristics are provided in Appendix 1; p.A1-49.

Table 2.5-2
Design Characteristics

Factor	Existing (Average)	Recommended
K30	10.83	10.5
D Factor	57.1	57.1
T24 Factor (Medium & Heavy)	10%	5%

2.5.5 Level of Service Analysis

Based on the existing (adjusted) traffic data provided above, an assessment of the level of service (LOS) of each roadway and intersection within the study area was conducted.

2.5.5.1 Level of Service Analysis, Roadways

Using the existing AADT volumes summarized in Figure 2.5-3, an assessment of roadway level of service was performed. Table 2.5-3 provides a summary of operating conditions of the roadways within the study area using FDOT Generalized Service Volume Tables. However, the following list of deficient roadways is identified in the 2008 adopted Annual Update Inventory Report (AUIR) including background traffic and vested trips.

These are:

- CR 951/Collier Boulevard – north of Golden Gate Parkway
- CR 951/Collier Boulevard – south of Golden Gate Parkway
- CR 951/Collier Boulevard – north of US 41*
- CR 951/Collier Boulevard – south of US 41*
- CR 951/Collier Boulevard – north of CR 864/Rattlesnake Hammock Road*
- CR 951/Collier Boulevard – south of CR 864/Rattlesnake Hammock Road *
- Golden Gate Boulevard – Wilson Boulevard to DeSoto Boulevard
- US 41 – east of CR 951/Collier Boulevard

* Existing deficient facilities currently funded as capacity improvement projects.

2.5.5.2 Level of Service Analysis, Intersections

As with roadway data, intersection operating conditions were assessed. Existing signal timing information was provided by Collier County (Appendix 1; pp.A1-64 – A1-90). The latest version of the Highway Capacity Software (HCS) was employed. Table 2.5-4 summarizes the operating conditions for each analyzed intersection.

Based on this analysis, four intersections are estimated to fall below the Level of Service Standard (LOS D). These are:

- CR 951/Collier Boulevard at Pine Ridge Road
- CR 951/Collier Boulevard at Davis Boulevard
- CR 951/Collier Boulevard at I-75 South Ramps
- Golden Gate Boulevard at Wilson Boulevard

Table 2.5-3
Arterial Level of Service, Existing Conditions

County Count Station	Location	# of Lanes	Roadway Classification	2006 AADT	Growth Rate	2007 AADT	LOS at Standard	2006 LOS	2007 LOS
510 **(605)**	CR 886/Golden Gate Parkway - west of CR 951/Collier Boulevard	4D	Non-State - County	19,000	5.46%	20,000	D	D	D
518	CR 864/Rattlesnake Hammock Road - west of CR 951/Collier Boulevard	4D	Non-State - County	10,100 (1)	5.46%	10,700	D	C	C
525	CR 951/Collier Boulevard - north of CR 886/Golden Gate Parkway	4D	Non-State - County	32,000	5.46%	33,700	D	**F**	**F**
531	Golden Gate Boulevard - east of CR 951/Collier Boulevard/SR 951	4D	Non-State - County	30,800	5.46%	32,500	D	**E**	**F**
532	CR 951/Collier Boulevard - north of US 41	4D	Non-State - County	28,300	5.46%	29,800	D	D	**E**
536	CR 951/Collier Boulevard - north of Pine Ridge Road	4D	Non-State - County	36,900	5.46%	38,900	D	**F**	**F**
557	CR 951/Collier Boulevard - south of US 41	4D	Non-State - County	39,200	5.46%	41,300	D	**F**	**F**
571	US 41/SR 90 - west of CR 951/Collier Boulevard	6D	State - Class 2	30,400	5.46%	32,100	E	C	C
573	CR 951/Collier Boulevard - north of SR 84/Davis Boulevard	4D	Non-State - County	57,300	5.46%	60,400	D	**F**	**F**
580	CR 862/Vanderbilt Beach Road - west of CR 951/Collier Boulevard	2U	Non-State - County	15,000	5.46%	15,800	D	**F**	**F**
584 **(655)**	CR 951/Collier Boulevard - north of Golden Gate Boulevard	4D	Non-State - County	20,100	5.46%	21,200	D	D	D
602	CR 951/Collier Boulevard - north of CR 864/Rattlesnake Hammock Road	4D	Non-State - County	39,800	5.46%	4,200	D	**F**	**F**
603	CR 951/Collier Boulevard - south of CR 864/Rattlesnake Hammock Road	4D	Non-State - County	34,200	5.46%	36,100	D	**F**	**F**
607	CR 951/Collier Boulevard - south of CR 886/Golden Gate Parkway	4D	Non-State - County	30,000	5.46%	31,600	D	**E**	**F**
608	US 41/SR 90 - east of CR 951/Collier Boulevard	2U	State - Class 1	15,200	5.46%	16,000	C	**D**	**E**
636	Everglades Boulevard - north of Golden Gate Boulevard	2U	Non-State - Other	8,100	5.46%	8,500	D	**E**	**E**
637	Everglades Boulevard - south of Golden Gate Boulevard	2U	Non-State - Other	6,800	5.46%	7,200	D	D	D
643 **(642)**	Green Boulevard - west of CR 951/Collier Boulevard	2U	Non-State - County	8,500	5.46%	9,000	D	D	D
652	Golden Gate Boulevard - east of Wilson Boulevard	2U	Non-State - Other	19,100	5.46%	20,100	D	**F**	**F**
678	Golden Gate Boulevard - west of Wilson Boulevard	2U	Non-State - Other	27,200	5.46%	28,700	D	**F**	**F**
680	Wilson Boulevard - north of Golden Gate Boulevard	2U	Non-State - Other	10,300	5.46%	10,900	D	D	**E**
681	Wilson Boulevard - south of Golden Gate Boulevard	2U	Non-State - Other	400	5.46%	400	D	C	C

NOTES:

(1) AUIR Volume

LOS Volumes determined via FDOT Quality Level of Service Handbook, 2002; Table 4-2

Table 2.5-4
Intersection Level of Service, Existing Conditions

Signalized Intersections							
CR 951/Collier Boulevard @ US 41	**Approach**	**Delay**	**LOS**	**CR 951/Collier Boulevard @ Davis Boulevard**	**Approach**	**Delay**	**LOS**
	EB	30.4	C		EB	150.9	F
	WB	28.8	C		WB	48.4	D
	NB	67.6	E		NB	143.6	F
	SB	29.3	C		SB	58.4	E
	Overall	46.7	D		Overall	108.6	F
CR 951/Collier Boulevard @ Pine Ridge Road	**Approach**	**Delay**	**LOS**	**CR 951/Collier Boulevard @ Rattlesnake Hammock Road**	**Approach**	**Delay**	**LOS**
	EB	32.0	C		EB	64.3	E
	WB	234.0	F		WB	22.8	C
	NB	187.0	F		NB	33.2	C
	SB	53.7	D		SB	18.1	B
	Overall	158.8	F		Overall	31.7	C
CR 951/Collier Boulevard @ Grand Lely Drive	**Approach**	**Delay**	**LOS**	**Golden Gate Boulevard @ Wilson Boulevard**	**Approach**	**Delay**	**LOS**
	EB	35.1	D		EB	99.5	F
	WB	35.8	D		WB	20.6	C
	NB	19.5	B		NB	45.5	D
	SB	21.5	C		SB	40.4	D
	Overall	22.0	C		Overall	74.0	E
CR 951/Collier Boulevard @ Green Boulevard	**Approach**	**Delay**	**LOS**	**CR 951/Collier Boulevard @ Golden Gate Boulevard**	**Approach**	**Delay**	**LOS**
	EB	20.3	C		WB	37.1	D
	NB	24.8	C		NB	54.7	D
	SB	13.5	B		SB	22.8	C
	Overall	19.6	B		Overall	42.3	D
CR 951/Collier Boulevard @ I-75 North Ramps	**Approach**	**Delay**	**LOS**	**CR 951/Collier Boulevard @ Golden Gate Parkway**	**Approach**	**Delay**	**LOS**
	WB	44.0	D		EB	35.3	D
	NB	16.2	B		NB	25.4	C
	SB	45.3	D		SB	29.4	C
	Overall	26.4	C		Overall	29.0	C
CR 951/Collier Boulevard @ I-75 South Ramps	**Approach**	**Delay**	**LOS**				
	EB	422.5	F				
	NB	123.4	F				
	SB	14.3	B				
	Overall	164.8	F				
Unsignalized Intersections							
US 41 @ Six L's Farms Road	**Approach**	**Delay**	**LOS**	**US 41 @ CR 92**	**Approach**	**Delay**	**LOS**
	EB	8.1	A		WB	8.1	A
	SB	17.1	C		NB	12.9	B

Construction of the Wilson Boulevard Extension will divert a significant portion of north-south traffic from these constrained areas, resulting in improved arterial speeds through the entire study area.

Section 3.0 Tier 1 Corridor Alternatives

3.1 Design Criteria

The proposed corridors were developed using criteria from the Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (referred to as Florida Greenbook) and FDOT's Plans Preparation Manual (PPM). Since the proposed north-south arterial will be a county road, Florida Greenbook applies as the minimum standards. The proposed facility will be a four-lane rural arterial, with suburban and urban sections, with design speeds ranging from 45 mph to 55 mph, and with right-of-way widths varying from 120 feet to 200 feet. The design criteria used for the maximum impact to the proposed corridor are listed in Table 3.1-1.

Table 3.1-1
Design Criteria

	Design Criteria				Florida Greenbook May 2005		Plans Preparation Manual January 2009	
					Value	**Location**	**Value**	**Location**
	Facility Type				Rural Arterial	-	Rural Arterial	-
	Volume (AADT)				34,500	-	34,500	-
	Standards for Low, Medium and High AADT				-	-	Low AADT	Pg. I-8
	Design Speed (mph)				55	Table 3-1	55	Table 1.9.1
Typical Section	Lane Width	Mainline (ft)			11	Table 3-7	12	Table 2.1.1
	Minimum Median (ft)				40	Table 3-11	40	Table 2.2.1
	Shoulder Width	Mainline (2-Lanes)	Outside	Full (ft)	10	Table 3-9	8	Table 2.3.2
				Paved (ft)	-	-	5	Table 2.3.2
			Inside	Full (ft)	6	Table 3-9	6	Table 2.3.2
				Paved (ft)	-	-	0	Table 2.3.2
	Border Width (ft)				-	-	40	Table 2.5.1
	Recoverable Terrain (ft)				24	Table 3-12	30	Table 2.11.11
Horizontal	Minimum Stopping Sight Distance (ft)				495	Table 3-6	495	Table 2.7.1
	Maximum Deflection without a Curve				-	-	0º 45’ 00”	Table 2.8.1a
	Length of Curve	Desirable (ft)			-	-	825	Table 2.8.2a
		Minimum (ft)			-	-	400	Table 2.8.2a
	Maximum Curvature (e=NC)				9,949	Table 3-1	9,949	Table 2.9.1
	Maximum Curvature (e max = 0.10)				881	Table 3-3	881	Table 2.9.1
Vertical	Maximum Grade (Flat Terrain)				4%	Table 3-4	3.5%	Table 2.6.1
	Maximum Change in Grade without Vertical Curve				0.50%	Table 3-5	0.50%	Table 2.6.2
	K Value	Crest Curve			185	Table 3-4	185	Table 2.8.5
		Sag Curve			115	Table 3-6	115	Table 2.8.6

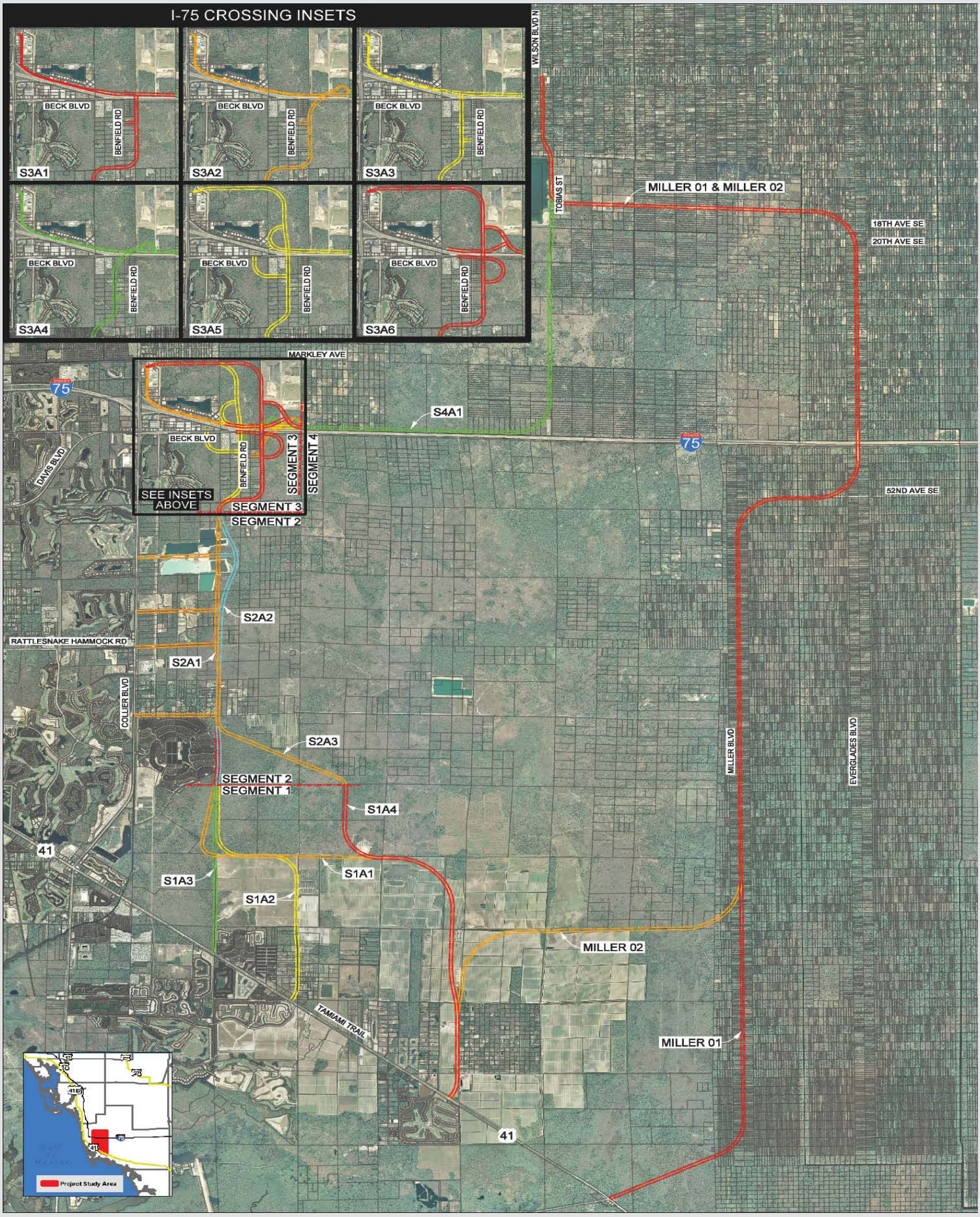
Source: Florida Greenbook (May 2005); Plans Preparation Manual (January 2009)

3.2 Description of Tier 1 Alternatives

Corridor alternatives were initially developed based on the location of existing roadways, environmentally sensitive lands, existing and planned developments as well as connectivity, functionality, public comments received from the first Study workshop and key stakeholder meetings. The project team established the base evaluation screening matrix and began the Tier 1 screening.

The Tier 1 alternatives were developed based on comments received from the corridor workshop and subsequent discussions with Collier County staff and area stakeholders. Preliminary traffic, engineering and environmental analyses were conducted for each alignment in order to screen out those that either do not meet the established need for the proposed north-south road or are not viable due to factors considered. The study team met with Collier County staff on June 26, 2008, to discuss the findings of the preliminary analyses. During the meeting, those alternatives that are not viable were identified, discussed, and removed from further consideration as alignments for the proposed corridor.

Multiple segments were combined to develop fourteen (14) potential north/south corridors. These corridors were grouped in to four segments. Figure 3.2-1 illustrates the Tier 1 corridor alternatives. Each segment is described in detail following.



AIM Engineering & Surveying, Inc.

FIGURE 3.2-1

Tier 1—Corridor Alternatives

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

WILSON BOULEVARD extension BENFIELD ROAD corridor Study
Collier County

N W E S

3.2.1 Segment 1

The first segment is comprised of the southwest quadrant of the study area, the boundary went north from US 41 to the southern end of Verona Walk, and east from CR 951/Collier Boulevard to Six L's Farms Road. Four corridors were developed in Segment 1.

3.2.1.1 S1A1 – Segment 1 Alignment 1

This corridor follows Six L's Farms Road and extends north to the south side of the state owned lands where the corridor turns west. The corridor continues west and then turns north until Segment 2, avoiding the need to acquire right-of-way from the state owned lands. The total length of this corridor is 7.25 miles.

3.2.1.2 S1A2 – Segment 1 Alignment 2

This corridor follows Greenway Road and extends north to the south side of the state owned lands where the corridor turns west. The corridor continues west and then turns north clipping the corner of the state owned lands. The total length of this corridor is 3.83 miles.

3.2.1.3 S1A3 – Segment 1 Alignment 3

This corridor follows Naples Reserve Boulevard north, avoiding the western boundary of the state owned lands. The total length of this corridor is 2.43 miles.

3.2.1.4 S1A4 – Segment 1 Alignment 4

Similar to S1A1, this corridor follows Six L's Farms Road and extends north to the southern boundary of the state owned lands where the corridor turns west. The corridor continues west for a short segment then turns north between two parcels of the state owned lands. The total length of this corridor is 5.39 miles.

3.2.2 Segment 2

The second segment is from the north side of Six L's Farms to south of Benfield Road. Three corridors were developed for Segment 2. Four possible connection points were identified to connect the corridor and CR 951/Collier Boulevard. Starting on the south end, the first connection follows Sabal Palm Road. The second and third connection extended Rattlesnake Hammock Road and Lord's Way from CR 951/Collier Boulevard to the corridors. The final connection goes through Better Roads Quarry approximately two miles south of Beck Boulevard.

3.2.2.1 S2A1 – Segment 2 Alignment 1

This corridor travels straight north with minimal curvature and is approximately one mile east of CR 951/Collier Boulevard. The total length of this corridor is 7.97 miles.

3.2.2.2 S2A2 – Segment 2 Alignment 2

This corridor travels straight north, similar to S2A1, but is realigned to the east to avoid impacts to the quarry operations previously disturbed lands. The total length of this corridor is 8.20 miles.

3.2.2.3 S2A3 – Segment 2 Alignment 3

This corridor is similar to S2A1 except for the south end where the corridor starts further east connecting with corridor S1A4. The total length of this corridor is 8.90 miles.

3.2.3 Segment 3

The third segment, which is the shortest segment, extends from south of Benfield Road to Smith Road. Six corridors were developed for Segment 3.

3.2.3.1 S3A1 – Segment 3 Alignment 1

This corridor travels along the east side of the properties along Benfield Road. The grade separation over I-75 is east of the existing toll plaza. The corridor on the north side of I-75 starts at the intersection of CR 951/Collier Boulevard and City Gate Boulevard and travels south following White Lake Boulevard to Segment 4, which starts at Smith Road. The connection from the south side to the north side of I-75 was developed as an elevated "tee" intersection with the east-west segment north of I-75. A connection to Benfield Road was developed where the profile from the grade separation is back to grade south of I-75. The total length of this corridor is 4.31 miles.

3.2.3.2 S3A2 – Segment 3 Alignment 2

This corridor travels along the east side of the properties along Benfield Road. The grade separation over I-75 was developed with a horizontal curve which allows the through movement from the south to Segment 4. The corridor connection to CR 951/Collier Boulevard starts at the intersection of CR 951/Collier Boulevard and City Gate Boulevard and travels south following White Lake Boulevard and connects to the southern corridor just west of Segment 4 as a "tee" intersection. A connection to Benfield Road was developed where the profile from the grade separation is back to grade south of I-75. The total length of this corridor is 4.75 miles.

3.2.3.3 S3A3 – Segment 3 Alignment 3

Similar to S3A1, except this corridor travels north along the west side of the properties along Benfield Road. The grade separation over I-75 is just east of the existing toll plaza. The corridor on the north side of I-75 starts at the intersection of CR 951/Collier Boulevard and City Gate Boulevard and travels south following White Lake Boulevard to Segment 4. The connection from the south side to the north side of I-75 was developed as an elevated "tee" intersection. A connection to Benfield Road was developed where the profile from the grade separation is back to grade south of I-75. The total length of this corridor is 4.02 miles.

3.2.3.4 S3A4 – Segment 3 Alignment 4

Similar to S3A2, except this corridor travels north along the west side of the properties along Benfield Road. The grade separation over I-75 was developed with a horizontal curve which allows the through movement from the south to Segment 4. The corridor connection to CR 951/Collier Boulevard starts at the intersection of CR 951/Collier Boulevard and City Gate Boulevard and travels south following White Lake Boulevard and connects to the southern corridor west of Segment 4 as a "tee" intersection. A connection to Benfield Road was developed where the profile from the grade separation is back to grade south of I-75. The total length of this corridor is 4.47 miles.

3.2.3.5 S3A5 – Segment 3 Alignment 5

This corridor travels north along the west side of the properties along Benfield Road and continues north with a grade separation over I-75 that is just east of the existing toll plaza. The corridor continues north and turns west at the north side of the City Gate property and connects to the CR 951/Collier Boulevard at the City Gate Boulevard intersection. North of I-75 a "tee" intersection was developed and loops to the southwest under the grade separation with I-75 and continues to the east to Segment 4. A connection from the loop to White Lake Boulevard is also provided. South of I-75 a connection is provided to Beck Boulevard west of the corridor and south of the R.V. park. No direct connection is provided from the arterial to Benfield Road. However, access to Benfield Road is provided by Beck Boulevard. The total length of this corridor is 5.58 miles.

3.2.3.6 S3A6 – Segment 3 Alignment 6

This corridor travels north along the east side of the properties along Benfield Road and continues north with a grade separation over I-75 that is just east of the existing toll plaza. The corridor continues north and turns west at the north side of the City Gate property and connects to the CR 951/Collier Boulevard at the City Gate Boulevard intersection. North of I-75 a "tee" intersection was developed and from the intersection the corridor swings to the southeast and connects with Segment 4. From this portion of the corridor a connection is provided to White Lake Boulevard under the grade separation. South of I-75 a "tee" intersection is provided on the east side of the corridor which loops around to the northeast and connects to Beck Boulevard. The main corridor will have an intersection with Benfield Road. The total length of this corridor is 6.64 miles.

3.2.4 Segment 4

The fourth segment extends from Smith Road to Golden Gate Boulevard. Only one corridor was determined to be feasible for Segment 4.

3.2.4.1 S4A1 – Segment 4 Alignment 1

This corridor travels east, on the north side of I-75, until Wilson Boulevard where it would turn north and follow Wilson Boulevard until it intersects Golden Gate Boulevard. The total length of this corridor is 8.06 miles.

3.2.5 Miller Boulevard Corridors

Two corridors were developed for the eastern portion of the study area. Both corridors are the same except for the southern connection to US 41.

3.2.5.1 Miller Boulevard 01

The original corridor starts at US 41 and San Marco Road intersection and travels northeast until it aligns with Miller Boulevard. The corridor then travels along Miller Boulevard until around 52nd Avenue SE where it turns east and then turns back north to align with Everglades Boulevard The corridor would cross over I-75 and continue north along Everglades Boulevard until around 18th Avenue SE where the corridor would turn west. The corridor would continue west until turning north to align with Wilson Boulevard and then travel north along Wilson Boulevard until it intersects with Golden Gate Boulevard. The total length of this corridor is 21.96 miles.

During the initial research, it was discovered Collier County had an existing agreement, signed in 2003, that prohibited use of the southern portion of Miller Boulevard to connect to US 41. The Miller Boulevard alignment was altered as described below.

3.2.5.2 Miller Boulevard 02

This corridor starts at US 41 and travels along Six L's Farms Road, then shifting east to Miller Boulevard. The corridor then travels along Miller Boulevard until around 52nd Avenue SE where it turns east and then turns back north to align with Everglades Boulevard The corridor would cross over I-75 and continue north along Everglades Boulevard until around 18th Avenue SE where the corridor would turn west. The corridor would continue west until turning north to align with Wilson Boulevard and then travel north along Wilson Boulevard until it intersects with Golden Gate Boulevard. The total length of this corridor is 21.59 miles.

3.3 Screening of Tier 1 Alternatives

3.3.1 Natural Environment

Environmental issues such as potential wetland impacts, public land impacts, and impacts to protected species and their habitat, are a critical component of selecting feasible alignment alternatives within this environmentally sensitive study area. All of the segments examined have some potential to impact wetlands, public lands, and protected wildlife species' habitat. No alignment has greater potential for environmental impacts to wetlands, public lands (Picayune Strand State Forest) and protected species (Florida panther), than the Miller Boulevard alignment. However, despite the magnitude of environmental impacts associated with the Miller Boulevard alternative, when compared to any of the other alternatives, the study team continued

to consider Miller Boulevard as an alternative, to be advanced further in the study, for a number of other non-environmental reasons. Therefore, the elimination of segments and alternatives through Tier 1 Analysis was justified using cultural, social, engineering, traffic, contamination and significant stakeholders input.

3.3.2 Physical Environment

A contamination screening of the Tier 1 corridors was conducted to determine the potential for contamination of the proposed right-of-way from within the right-of-way and adjacent properties. (Figure 3.3-1) To meet this objective, the scope of services included the following: a visual reconnaissance of the property and of the surrounding area to observe site conditions relative to environmental concerns to help evaluate if obvious adjacent land use might suggest recognized environmental conditions, a review of available historic aerial photographs, topographical maps, and soil surveys, a review of federal, state, and local records, and evaluation of environmental data base records and maps with an overlay of Tier 1 alternatives.

A total of 75 potential contamination sites were identified within the study area. Of these 75 sites, only 17 sites are close enough to the Tier 1 corridor alternatives to be considered a potential contamination risk. Of the 17 identified sties, 13 sites were identified as registered underground or aboveground storage tanks from the Florida Department of Environmental Protection (FDEP). The remaining four sites were identified as Leaking Underground Storage Tanks (LUST) from the FDEP as facilities and/or locations that have notified the FDEP of a possible release of contaminants from petroleum storage systems. Based on the facilities' distances from the Tier 1 alternatives and the current regulatory status of the facilities, the 17 sites are ranked as "low" risks based on the guidelines provided in Chapter 22 in Part 2 of FDOT's PD&E Manual. Table 3.3-1 provides a summary of the 17 sites identified during the screening of the Tier 1 corridor alternatives.

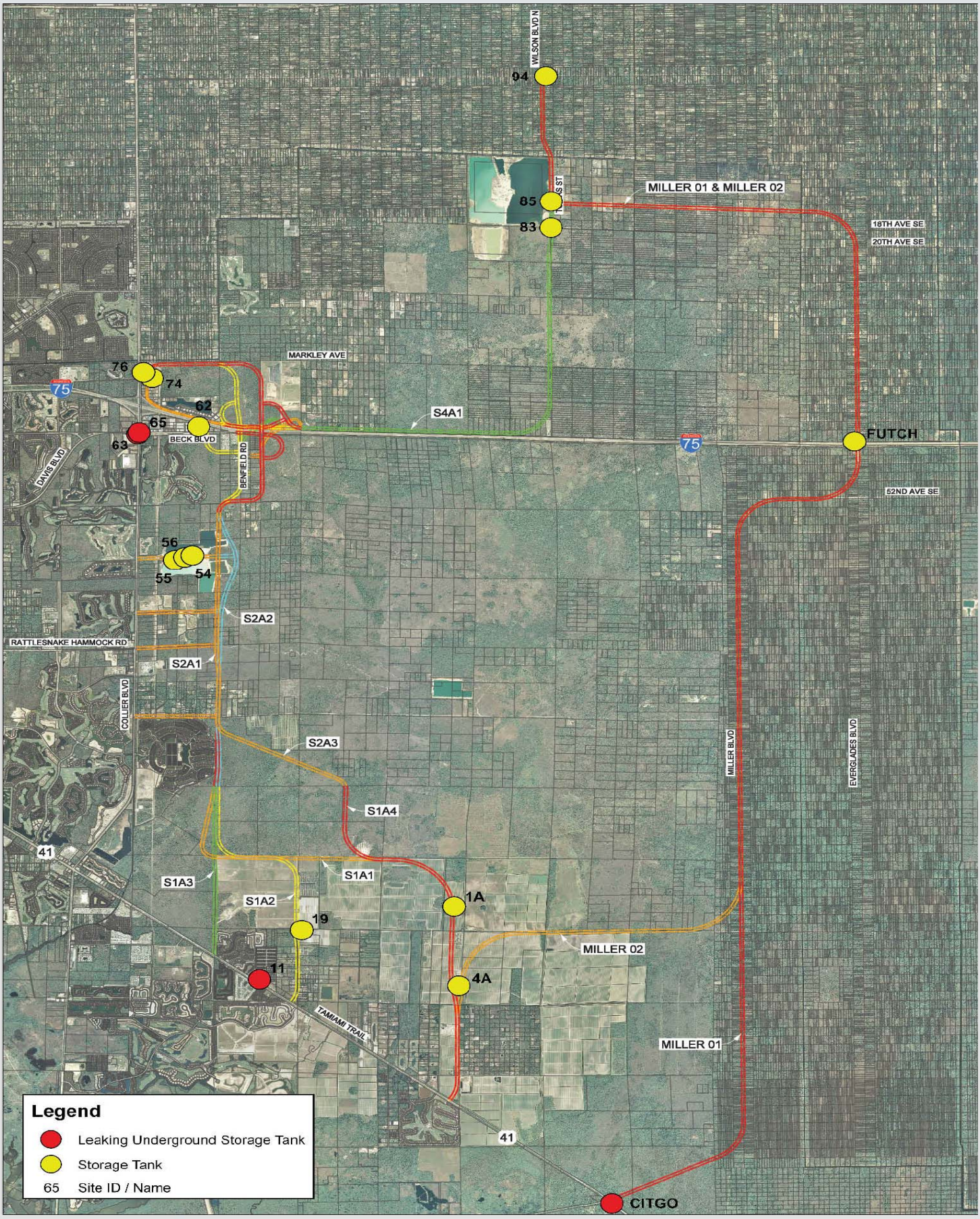


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FIGURE 3.3-1

Tier 1—Contamination

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

Table 3.3-1
Potential Contamination Sites

Site No.	Property Description (name, address)	Permit or Facility ID	Potential Contaminant (Hazardous or Petroleum)	Activity or Concern
11	5 Star Petroleum Station	8518215	Unleaded Gas	Discharge Notification/ Cleanup Completed
11	1 Stop Convenience Store	8518215	Unleaded Gas	In service tank
19	Northrup King Co.	8735905	Vehicular Diesel/Onsite Heating Oil	In Service Tanks
54	Better Roads Inc Plant #4	9300223	Heating Oil/Diesel	Tanks
55	Southern Sand and Stone Inc.	8732404	Gas/Diesel/ Waste Oil	Tanks
56	Preferred Materials Inc.	9200423	Diesel	Tanks
63	Mobil Alligator Alley	8518131	Unleaded Gasoline/ Vehicular Diesel	Discharge Notification/ Tanks
65	J&T Travel Mart	8518199	Vehicular Diesel	Discharge Notification/ Removed Tanks
68	Raymond Building Supply	9805442	Unleaded Gas	In service tanks
74	Collier Co South Regional WTP	9201777	Diesel/Ammonia/ Mineral Acid	Tanks
76	BP Amoco	9808082	Diesel/Gasoline	Tanks
83	Collier County Wellhouse #25	9700103	Diesel	Tank
85	Collier County Wellhouse #25	9700104	Diesel	Tank
94	E's Country Stores LLC	8944898	Unleaded Gas	Discharge Notification/ Site Rehabilitation Complete/Tanks
1*A*	Diamond Tomato-Naples Farm	9804333	Generator/Pump Diesel	In service
1*A*	Diamond Tomato-Naples Farm	9803340	Unleaded Gas/Diesel	In service tanks
4*A*	Farm Op Inc. #7	8944625	Diesel, Unleaded Gas	In service tanks
Citgo	Citgo-Hammock	8518190	Diesel, Unleaded Gasoline	In Service tanks
Futch	Futch Construction Inc.	8736871	Diesel	Tanks

Potential contamination associated with these sites should be identified and evaluated during the design and right-of-way acquisition phase of the project. The evaluation should include subsurface investigations where warranted.

3.3.3 Social Environment

Potential effects to community facilities and services associated with the proposed corridors are mapped in Figure 3.3-2, Community Facilities. The most notable community feature involved with each corridor alternative is public lands. The most significant land use in the area is public land, per the ETDM Planning Screen, which accounts for approximately 35 percent of land use within the study area (ETDM, 2008). More detailed analysis shows this to be approximately 41 percent, as described in section 2.2.6 above. Not all publicly held land within the project is recreation area, but many recreational uses are available through the Picayune Strand State Forest and associated lands. Citizens attending the corridor workshop commented that equestrian access would be impeded by any improvement along the western side of the Picayune Strand State Forest. Interest in maintaining the access to recreation lands was also voiced by residents of the North Belle Meade community through the public comment process. Any improvement impacting trails and access to Picayune Strand State Forest would be a potential challenge to the availability of local recreational resources to the community.

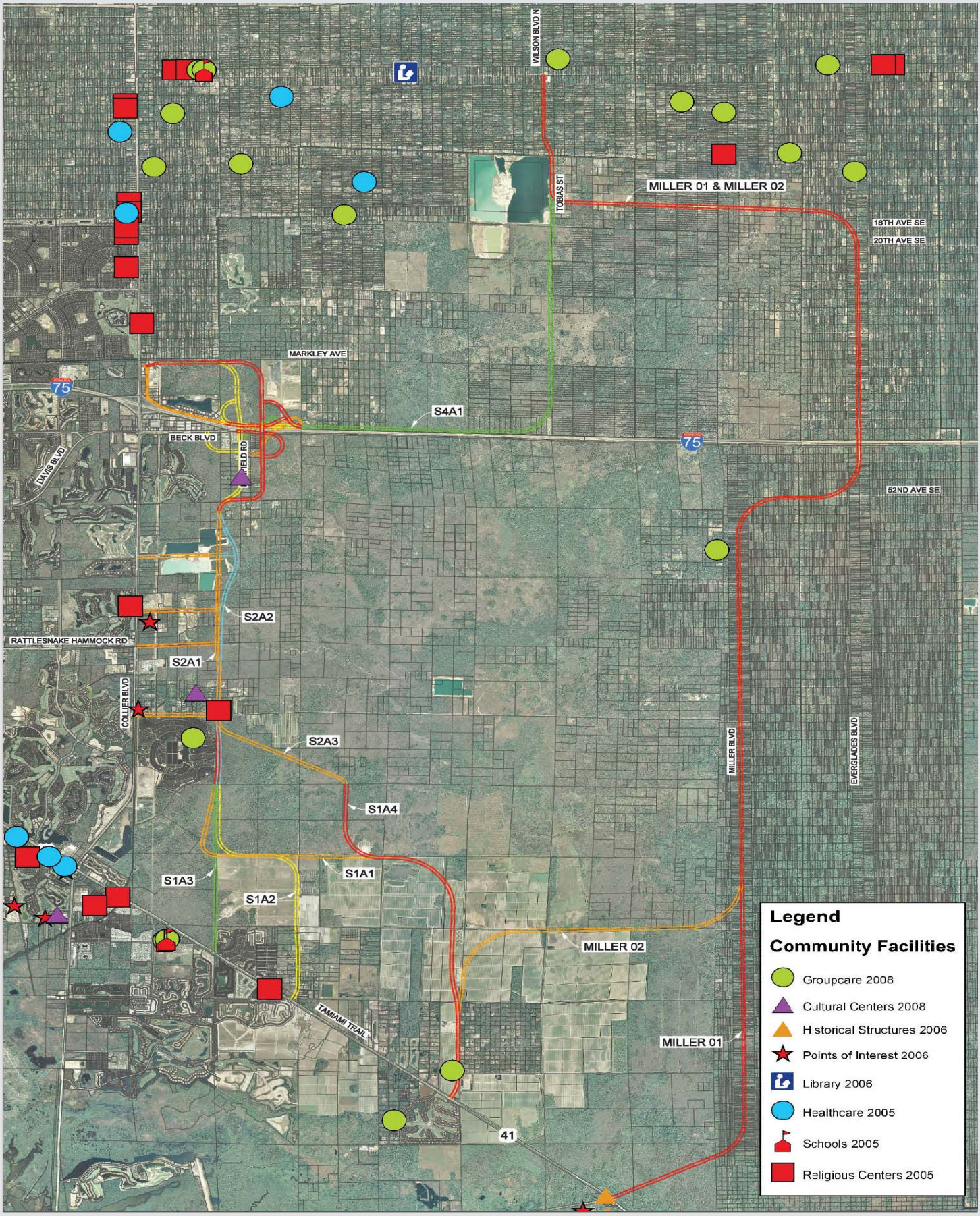

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FIGURE 3.3-2

Tier 1—Community Facilities

Wilson Boulevard Extension/Benfield Road Corridor Study
Collier County, Florida

- Benfield Area Community Meeting held at Lely Elementary School in Naples on September 10, 2008
- VeronaWalk Community Meeting held at VeronaWalk Community Ballroom in Naples on December 3, 2008
- Public Workshop at Shepherd of the Glades Lutheran Church in Naples on February 12, 2009

The format of these events was very successful because it provided citizens' an opportunity to learn about the project, understand the social, environmental and economic character of the area, ask questions and offer input to county staff and consultant team members. Citizens were encouraged to share their voices by providing comments at the time of the event, or via email, fax, USPS mail or by directly contacting the county office.

The Tier 1 alternatives were provided for public display at the Public Workshop at Shepherd of the Glades Lutheran Church in Naples on February 12, 2009.

A more detailed summary of the Public Involvement Program is provided in Section 5.0.

3.4 Tier 1 Findings

Preliminary traffic engineering, and environmental analyses were conducted for each Tier 1 corridor in order to screen out alternatives based on fatal flaw criteria developed through coordination with the study team. These criteria include:

- Diversion of traffic from CR 951/Collier Boulevard
- Public input
- Environmental and wildlife impacts

The study team met on June 26, 2008, to review and discuss the findings from the Tier 1 screening. During the meeting, the corridors that were not clearly viable were identified, discussed, and upon consensus, removed from further evaluations. Additionally, a draft set of measures of effectiveness (MOE), were begun to follow through into the analysis portion of Tier 2 screening. The MOEs were finalized in the Tier 2 screening analysis, and are presented in detail in the Tier 2 Findings Section of the Report.

The decision matrix below (Table 3.4-1) presents the decision made for each alignment alternative to advance from Tier 1 analysis to Tier 2 analysis. Alternatives indicated in bold text were determined to be viable alternatives to be carried forward in consideration of the proposed corridors. A summary of how the decision was reached for each alternative is given in the following section. Additionally, the alternatives were divided into four segments for evaluation purposes. These four segments were illustrated in Figure 3.2-1. There were 14 corridors developed in these four segments one mile east of CR 951/Collier Boulevard and two corridors developed along Miller Boulevard which were explained in detail in Section 3.2 Description of Tier 1 Alternatives.

Table 3.4-1
Tier 1 Decision Matrix

Alignment Alternative	Decision
Miller Boulevard	° Lower segment was in conflict with 2003 agreement between County, Board of Trustees of the Internal Improvement Trust Fund, and the South Florida Water Management District ° Provides an additional Hurricane Evacuation Route between Marco Island and Immokalee ° Modified to Miller Boulevard 02 after review of 2003 agreement ° Meets the need for the project and *was carried forward* for more detailed analysis and consideration
Section 1 - Alignment 1 (S1A1)	° Meets the need for the project and *was carried forward* for more detailed analysis and consideration
Section 1 - Alignment 2 (S1A2)	° Would divert up to 14,000 vehicles/day to Greenway Road, a residential road ° Would have adverse effect on residents ° Runs parallel to alignment 3 with no additional benefits ° Requires more pavement and additional costs in wetland, conservation, habitat mitigation, and construction ° S1A2 is redundant to alignment S1A3 and therefore, S1A2 *was <u>not</u> carried forward* for consideration
Section 1 - Alignment 3 (S1A3)	° Meets the need for the project and *was carried forward* for more detailed analysis and consideration
Section 1 - Alignment 4 (S1A4)	° Bisects parcels for conservation donated by Naples Reserve ° Doesn't divert enough vehicles away from CR 951/Collier Boulevard to provide significant benefit ° Requires more pavement and additional costs in wetland, conservation, habitat mitigation, and construction ° Because alignment 4 bisects parcels that will be donated for conservation by Naples Reserve, it is not a viable alternative and *was <u>not</u> carried forward* for consideration
Section 2 - Alignment 1 (S2A1)	° Adverse/costly impacts to portions of existing quarry ° Adjacent to 5 contamination sites ° S2A1 is redundant to alignment S2A2 and therefore, S2A1 *was <u>not</u> carried forward* for consideration
Section 2 - Alignment 2 (S2A2)	° Meets the need for the project and *was carried forward* for more detailed analysis and consideration

Section 2 - Alignment 3 (S2A3)	° Bisects a parcel for conservation donated by Naples Reserve ° Without S1A4 (eliminated above), does not connect to US 41 ° Adjacent to 5 contamination sites ° Because alignment 3 bisects parcels that will be donated for conservation by Naples Reserve, it is not a viable alternative and *was <u>not</u> carried forward* for consideration
Section 3 - Alignment 1 (S3A1)	° Would require costly improvements to White Lake Boulevard Business impacts are prohibitive ° Crosses 8 contamination sites ° Inconsistent with proposed CR 951/Collier Boulevard improvements ° Does not meet the ultimate need of the project and *was <u>not</u> carried forward* for consideration
Section 3 - Alignment 2 (S3A2)	° Would require costly improvements to White Lake Boulevard Business impacts are prohibitive ° Crosses 8 contamination sites ° Inconsistent with proposed CR 951/Collier Boulevard improvements ° Need for curved bridge structure is cost prohibitive ° Does not meet the ultimate need of the project and *was <u>not</u> carried forward* for consideration
Section 3 - Alignment 3 (S3A3)	° Would require costly improvements to White Lake Boulevard Business impacts are prohibitive ° Crosses 8 contamination sites ° Inconsistent with proposed CR 951/Collier Boulevard improvements ° Does not meet the ultimate need of the project and *was <u>not</u> carried forward* for consideration
Section 3 - Alignment 4 (S3A4)	° Would require costly improvements to White Lake Boulevard Business impacts are prohibitive ° Crosses 8 contamination sites ° Inconsistent with proposed CR 951/Collier Boulevard improvements ° Need for curved bridge structure is cost prohibitive ° Does not meet the ultimate need of the project and *was <u>not</u> carried forward* for consideration

Section 3 - Alignment 5 (S3A5)	° Would require costly improvements to White Lake Boulevard Business impacts are prohibitive ° Crosses 8 contamination sites ° Beck Boulevard connection would require takings ° Modified in Tier 2 to S3A7 alignment ° Meets the need for the project and *was carried forward* for more detailed analysis and consideration
Section 3 - Alignment 6 (S3A6)	° Would require costly improvements to White Lake Boulevard Business impacts are prohibitive ° Crosses 8 contamination sites ° Need for curved bridge structure is cost prohibitive ° Modified in Tier 2 to S3A8 ° Meets the need for the project and *was carried forward* for more detailed analysis and consideration
Section 4 - Alignment 1 (S4A1)	° Meets the need for the project and *was carried forward* for more detailed analysis and consideration

The remaining alignments moved into Tier 2, which contains additional detailed evaluation criteria.

3.3.3.1 Mobility and Safety

Significant increases in traffic volumes in the Collier County transportation network are projected by 2030. A capacity improvement or parallel facility is needed to alleviate traffic congestion on CR 951/Collier Boulevard. A new north-south arterial shown as the Tier 1 alternatives will enhance mobility within Collier County by serving as an alternative to CR 951/Collier Boulevard. A new north-south facility will also serve the evacuation needs of western Collier County residents. A new roadway is also anticipated to significantly enhance overall safety, emergency access, and traffic circulation, which will lead to improved response times and reduced incidents. Community services such as fire, emergency, and police services would likely see improved response times resulting from any build alternative, as there is no existing north-south corridor in the study limits. Evacuation times for areas to the south, including Marco Island, would likely be improved as well. Pedestrian movement is an important feature of the community and any new roadway corridor including pedestrian facilities would enhance the safety and functionality of existing networks. A field review conducted at the beginning of the study confirmed numerous bus stops which included bicycle racks and shelters throughout the project area. Emergency access and response times would be improved to this area through each build alternative, as well as evacuation times, and overall increased pedestrian and motorist safety. Each build alternative would provide linkage between intermittent existing pedestrian networks, increasing pedestrian mobility and safety throughout the project.

3.3.3.2 Land Use

Land use within the study area is primarily undeveloped rural. The Picayune Strand State Forrest occupies a large area within the central eastern section of the study area. Residential land use in 2000 was less than percent of the total study area (ETDM, 2008).

As previously stated, the most significant land use within the study area is public/semi public, comprising 35 percent of existing land uses. The next significant land use type is agricultural, comprising nearly 29 percent of existing land uses. Considering that the predominant form of existing land use is public/semi public, it is evident that this area will remain largely oriented to public/preserve land uses (ETDM, Collier Metropolitan Planning Organization). Concerns over Comprehensive Plan consistency are being addressed. The MPO has indicated further that the land use is not expected to change significantly in the future.

3.3.4 Public Input

Since the study began in 2007, Collier County has conducted a series of public outreach events, including two Public Workshops, the Benfield Road Community Meeting, the VeronaWalk Community Meeting and other meetings/presentations to agencies and stakeholders for this corridor study. In addition, two newsletters were prepared and information was posted on the County's website to provide project information and updates.

The local public was notified of the workshops and community meetings in advance. These events were held at the following locations:

- Public Workshop held at St. Agnes Church in Naples on March 26, 2008